AN

ESSAY

ON

DISEASES

INCIDENTAL TO

EUROPEANS IN HOT CLIMATES.

WITH THE

Method of preventing their fatal Conſequences.

By JAMES LIND,

Phyſician to his Majeſty's Royal Hoſpital at HASLAR near Portſmouth, and Fellow of the Royal College of Phyſicians in Edinburgh.

To which is added,

AN APPENDIX CONCERNING INTERMITTENT FEVERS.

To the whole is annexed,

A ſimple and eaſy Way to render ſalt Water freſh, and to prevent a Scarcity of Proviſions in long Voyages at Sea.

The SECOND EDITION, Enlarged and Improved.

Ars quæ ſanitati tuendæ præſidet, iis qui ſibi paruerint conſtantem ſanitatem promittit. GALEN.

LONDON:

Printed for T. BECKET and P. A. DE HONDT, in the Strand.

M.DCC.LXXI.

TO

PHILIP STEPHENS, Efq;

SECRETARY to the ADMIRALTY.

SIR,

MY former attempts in the literary way having been honoured with your protection and approbation, I prefume to prefix your name to this work; not only as an ornament to my labour, but as a fmall inftance of gratitude for the friendship with which you have diftinguifhed,

SIR,

Your moft obliged, and

moft obedient fervant,

JAMES LIND.

CONTENTS.

INTRODUCTION, - Page 1

PART I.

Diseases incidental to strangers in different parts of the world.

CHAP. I.

Diseases in Europe and North America.

SECT. I.

An unhealthy season in England in the year 1765. Of the most unwholesome seasons in the Netherlands, Hungary, Campania of Rome, the Islands of Sardinia and Minorca, and Gibraltar. 17

SECT. II.

The climate of Canada, Newfoundland, Halifax, New England, Maryland and Virginia. Seasons of ſickneſs in South Carolina, Georgia and Florida. Of Mobile and Penſacola. Page 33

CHAP. II.

Diſeaſes in Africa.

SECT. I.

Algiers, Tunis, Tripoli, Morocco, Egypt. 38

SECT. II.

Coaſt of Guinea. Its ſoil. Periodical rains. Its heat meaſured. Its healthy and ſickly ſeaſons. Quantity and effects of the rains. Surpriſing effects of the harmattans. Comparative degrees of health in the different European ſettlements on this coaſt. The diſeaſes which attack Europeans in Guinea. The waters of the country examined. A propoſal to prevent the Guinea worm. Whence the violence and mortality of diſeaſes in Guinea. A journal

kept in a voyage to Catchcou. Medical directions. Page 41

SECT. III.

Of the Canaries. Cape de Verd Islands. The Islands of St. Thomas, Princess, Ferdinando Po, St. Helena. Cape of Good Hope. Madagascar. Mascarenhas. Mauritius. Eastern Shores of Africa. 79

CHAP. III.

Diseases in the East Indies.

SECT. I.

Periodical sickness in the English factories in Arabia and Persia, &c. 83

SECT. II.

The four English Presidentships in India. Their comparative degrees of health. Diseases. 86

SECT. III.

The settlements of other European nations in India. Medical directions. Mr. Ives's curious

curious observations made in a journey from India to Europe by land. Page 95

CHAP. IV.

Diseases in the West Indies.

SECT. I.

Comparative degrees of health in the English settlements. Of the French, the Dutch, the Spanish settlements. Diseases. The yellow fever. Whence its most mortal symptoms. A disease similar to it in Cadiz: The most violent symptoms of this fever, and of the flux, mitigated by a change of air. The English, French and Dutch accounts of the Diseases in the West Indies. The dreadful mortality occasioned by them among the English at the Bastimentos, Carthagena, and the Havannah. 117

SECT. II.

Signs of an unhealthy country. A digression. 137

SECT. III.

Concerning ſuch employments as generally prove fatal to Europeans, in hot and unwholeſome climates. Page 145

PART II.

CHAP. I.

Advice for the preſervation of Europeans who reſide near the ſea, in hot climates.

SECT. I.

Poſitions founded on the preceding narrative, intereſting to all who go abroad. 159

SECT. II.

A convenient and ſafe retreat from ſickneſs pointed out. 163

SECT. III.

Floating factories recommended. 171

SECT. IV.

A change of air uſeful in fevers. Objections anſwered. 178

SECT. V.

Medicines ineffectual in a bad air. Effects of unwholesome air on persons in health; and on such as are sick. Consequences of removing the sick in fevers, from an impure, into a pure air. How long the effects of bad air lie concealed in the body; and how far the fever thence produced is contagious. Page 181

SECT. VI.

The sea air found beneficial in an epidemical fever at Naples. An infirmary-ship recommended. Its peculiar advantages. 197

CHAP. II.

Advice for the preservation of such Europeans as reside in inland countries.

SECT. I.

Unwholesome spots of ground in the most healthy countries. Healthy spots in the most sickly. 211

SECT. II.

Purity of the air in the Brasils, and in many other places in the Torrid Zone. An elevated and temperate situation on the side of a hill or mountain recommended. P. 216

SECT. III.

An asylum for health to be met with in almost all parts of the world. 219

SECT. IV.

An application of all our directions on this head to the island of Jamaica. Instances of their salutary effects. 223

SECT. V.

Objections answered. Dreadful and fatal effects of remaining all night in unhealthy places. Sickness arising from that circumstance, vulgarly ascribed to ridiculous causes. Measures beneficial in all endemical and annual epidemical distempers. 231

SECT. VI.

Unhealthy settlements to be maintained by the naturalization of the natives. Military

tary establishments in such places to be recruited by criminals. Great mortality among the soldiers in such settlements. Means of preserving such as are sent to India. Page 246

PART III.

CHAP. I.

Directions for the cure of those diseases which attack strangers in warm climates.

SECT. I.

Fevers. 257

SECT. II.

The Dysentery and Cholera Morbus. 274

SECT. III.

The Dry Belly-ache. 280

SECT. IV.

The Tetanus and Locked Jaw. 283

SECT. V.

The Barbiers. Page 286

CHAP. II.

Directions for the benefit of those whose constitutions have been impaired abroad.

SECT. I.

Directions for those of a relaxed and bilious habit of body. 289

SECT. II.

Directions for those of consumptive and dropsical habits of body. 291

SECT. III.

Of an habitual Flux. 295

APPENDIX.

Concerning Agues. 299

Proposals for preventing a want of fresh water, and a scarcity of provisions at sea. 351

INTRO-

INTRODUCTION.

THE following ſheets are preſented to the public, as a ſequel to what I have already publiſhed, or rather as a concluſion of all the conſiderations which I formerly offered on that moſt important and moſt intereſting ſubject, The preſerving the lives of ſeamen, and ſuch as undertake voyages to diſtant countries.

In that Eſſay, my attention was principally directed to the preſervation of people crowded together within the narrow limits of a ſhip, whether ſeamen, ſoldiers, or paſſengers.

After having ſuppoſed that theſe are ſafely landed in ſome foreign climate, the following precepts, in addition to thoſe I have already given for that purpoſe, will, I flatter

myſelf, greatly contribute to preſerve their health and conſtitutions unimpaired during their reſidence there.

Few perſons viſit either the Eaſt or the Weſt Indies for their pleaſure: but thouſands leave England every year, with the deſign of ſettling in ſome of our colonies. Numbers have lately gone to people thoſe parts of America and the Weſt India Iſlands ceded to us by the laſt treaty of peace. Regiments are often ſent out from England, to relieve others ſtationed in the moſt diſtant parts of the globe; and recruits for thoſe regiments are ſtill more frequently ordered abroad. This Eſſay is deſigned for the benefit of theſe ſeveral claſſes of Britiſh emigrants.

Men who thus exchange their native for a diſtant climate, may be conſidered as affected in a manner ſomewhat analagous to that of plants, removed into a foreign ſoil; where the utmoſt care and attention are required, to keep them in health, and inure them to their new ſituation; ſince, thus tranſ-

tranſplanted, ſome change and alteration muſt happen in the conſtitutions of both.

Some climates are healthy and ſalutary to European conſtitutions; as ſome ſoils are favourable to the production of European plants. But the countries beyond the limits of Europe which are chiefly frequented by Europeans, are very unhealthy, and the climate often proves fatal to them.

To ſhew of what high conſequence this ſubject is, let us conſider the unhappy fate of the firſt adventurers and diſcoverers of the ſouthern parts of Africa, the Portugueſe. They, in the 15th and 16th centuries, ſpread their ſettlements over the coaſt of Guinea, and a great part of India; where they ſuffered more by ſickneſs than by ſhipwrecks, though on an unknown coaſt, and even more than they did by their wars with the natives, and every other accident. In many places on the coaſt of Guinea where they were formerly ſettled, we can hardly trace any veſtige of their poſterity, but ſuch as are of the Mulatto breed. There ſtill in-

deed remains the corruption of their language, under the name of Lingua Franca, which is the only memorial of themſelves that they have left behind them.

Thoſe firſt adventurers into the ſouthern climates ſeem to have had no knowledge of the true cauſe of their ſickneſs. They aſcribed the mortality among them chiefly to their diet, which being the produce of the country, was quite new to them. They obſerved, that ſuch as had the good fortune to eſcape a fit of ſickneſs, or death, ſoon after their arrival, enjoyed afterwards a pretty good ſtate of health; and thence they concluded, that the blood of ſuch perſons had been entirely changed by the diet of the country. Upon this erroneous principle, they adopted a moſt fatal method of ſeaſoning people to theſe unhealthy climates.

They, by ſmall quantities, frequently repeated, took away as much blood as they ſuppoſed to be contained in the body, and thus they reduced the patient to a ſtate of extreme weakneſs.

Suppoſing

Suppoſing that this loſs was immediately ſupplied by the food and water of the country, and that their blood was thereby compoſed of the ſame materials with that of the natives, they flattered themſelves that they ſhould afterwards poſſeſs conſtitutions equally calculated to bear the inconveniences of the climate.

Their abſolute ignorance of the true cauſes of ſickneſs in thoſe climates, appears likewiſe from the bad ſituation of the places which they pitched upon for their ſettlements.

Thus, upon the firſt diſcovery of the Cape de Verd Iſlands, the Portugueſe propoſed that the capital of all their dominions in the northern parts of Guinea ſhould be placed in one of thoſe iſlands. For this purpoſe, they fixed upon Saint Jago, the moſt unhealthy of them all, and, as hath ſince clearly appeared, they founded their capital upon even the moſt unhealthy ſpot of that iſland. Then, as if the natural evils of the ſituation and climate had not been ſufficient, they added to them, by having

wet ditches in their neighbourhood, the waters of which were perpetually ftagnant. The great deftruction which has befallen the Portuguefe at that place, affords a moft ftriking and melancholy inftance of their error.

That the vegetable productions of unhealthful climates are the caufe of ficknefs incident to ftrangers, has been a very general opinion: as I have in another work obferved *, that when Prince Eugene commanded in Hungary, in order to avoid the ficknefs of that country, all the provifions for his table were fent him from Germany.

But the vegetable productions cannot be the caufes of ficknefs in fuch climates, for two reafons:

Firft, Becaufe rice, millet, Indian corn, and other productions of the moft unhealthy countries, are eat fafely, when brought from thence to other places.

* Effay on preferving feamen, page 57.

Secondly,

Secondly, Becaufe the ufe even of the European products for diet does not preferve from ficknefs in fuch fituations.

Further, the drinking of bad water has been highly blamed. Unwholefome water will certainly produce fluxes, and fome other difeafes. But whenever this is the fole caufe, the difeafes will be uniform, at all feafons of the year; and the ufe of good water will effectually prevent them: neither of which, upon experience, we find to be the cafe in the countries of which we treat.

Laftly, the irregularities of many young and thoughtlefs people who go to the Eaft or Weft Indies, have been affigned as the principal caufes of their ficknefs and death: thus it is often faid, that they fall a facrifice, not to the air of the country, but to their own debauchery. For if thofe who are newly arrived at Jamaica, drink immoderately of hot new-diftilled rum, they will unavoidably fall into a violent fever: if they commit any excefs in eating fruits, they will have a flux: or if they load their ftomach with indigeftible food, they will have a cho-

lera morbus, or a vomiting, which may carry them off in a few hours. But it is equally certain, that the moſt abſtemious and temperate perſons often die ſoon in unhealthy countries, as well as the irregular and bebauched.

Upon the whole, it appears, that violent exerciſes, exceſſive drinking, and every ſpecies of intemperance, diſpoſe the conſtitution, more eſpecially in hot climates, to the attack of the epidemic diſeaſes of the country: but then they are no other than prediſpoſing cauſes; the cauſa proxima, or the immediate cauſe of the epidemic diſeaſes in thoſe countries being very different.

The recent examples of the great mortality in hot climates, ought to draw the attention of all the commercial nations of Europe towards the important object of preſerving the health of their countrymen, whoſe buſineſs carries them beyond ſeas. It is found that ſickly or unhealthy ſettlements require a conſtant ſupply of people, and of courſe drain their mother-country of an incredible number of its inhabitants,

and ſome of thoſe too its moſt uſeful individuals. Of this the Spaniſh dominions abroad have furniſhed us with ſtriking proofs: and even at this day, many Spaniſh merchants, adventurers, and others, who yearly take their departure from Europe, die at Porto-bello or Carthagena, ſoon after their landing.

The Dutch ſettlements at Surinam, St. Euſtatia, and Curacoa, and in ſeveral places of India, have proved as fatal to the Hollanders, as the iſlands of Martinico, St. Domingo, and lately the climate of Cayenne, have done to the French ſettlers.

Great Britain itſelf has its *Jamaica*; where the number of Engliſh ſacrificed to the climate is hardly credible, and only to be gueſſed at from the common computation, that this iſland buried to the amount of the whole number of its white inhabitants once in five years, until lately, that it has become more healthy..

It is now a well known and moſt certain truth, that of ſuch Europeans as have fallen victims

victims to the intemperature of foreign climates, nineteen in twenty have been cut off by fevers and fluxes: theſe being the prevailing and fatal maladies in unhealthy countries in all parts of the world; as will appear by a ſurvey we are now to enter upon, of the various regions of the globe, and of the diſeaſes peculiar to them.

In my *Eſſay on preſerving ſeamen* *, I have ſaid, that a malignant fever of the remitting or intermitting kind, moſt frequently a double tertian, is the genuine produce of heat and moiſture, is the autumnal fever of all hot countries, and is the epidemic diſeaſe between the tropics. To which I may add, that it is alſo the diſeaſe moſt fatal to Europeans, in all hot and unhealthy climates.

Of this ſickneſs I am firſt to treat, and ſhall attempt to give a clear and diſtinct view of its various ſymptoms and appearances, in moſt parts of the known world; together with the influence of the climates,

* Page 49, the ſecond edition.

ſeaſons,

feaſons, and various other incidents upon it; in order to aſcertain the moſt effectual methods of preventing its attack.

But before we proceed, it will be neceſſary, for the ſake of greater perſpicuity, to give an explanation of the common terms, or appellations, by which the different fevers we ſhall have occaſion to mention have been diſtinguiſhed, and in what ſenſe they are here to be underſtood *.

For

* The ancient Greek and Roman Phyſicians denominated it an Ephemera, or Day-fever, when a fever, proceeding from violent exerciſe, drunkenneſs, or the like cauſes, attacked a perſon in health; and after continuing only twenty-four hours, unattended with any bad ſymptoms, left the patient in as perfect health as before its attack. But if it continued longer than twenty-four hours, without an intermiſſion, and ſtill unaccompanied with violent or dangerous ſymptoms, they then called it, a mild, continual fever; or a Synochus non putris: and the moſt ſimple idea we can conceive of this fever, is an increaſed velocity of the circulation of the blood, without any remarkable diſeaſed condition of the fluids, or of the ſolids of the body.

They, on the other hand, termed the fever Synochus putris, or a continual putrid fever, when the blood,

For though a fever is ſo frequent and common a diſeaſe, yet there is, perhaps, no one whatever ſo difficult to characterize and define by infallible criteria.

An

blood, or other humours of the body, were found to be in a morbid ſtate, and the bowels perhaps affected; the ſymptoms being then likewiſe more violent or dangerous. And thoſe appearances, or ſymptoms, might either ſhew themſelves upon the patients being firſt attacked, when the fever was then known to be putrid; or they might appear after a Synochus non putris had continued for ſome days, when it was then ſaid to have changed its nature, and to become a Synochus putris.

Beſides theſe, the ancients aſſigned various other names to fevers, according to their different ſymptoms. Thus the CAUSUS, or ardent fever, was ſo denominated, from a violent ſcorching heat of the body, accompanied with intolerable thirſt, dryneſs of the ſkin, mouth, tongue, &c. This ardent fever being moſt acute in its nature, often deſtroyed the patient on the third or fourth day from its attack, and (if the true cauſus) ſeldom continued longer than the ſeventh day. It may be here proper to obſerve, that the ancients do not ſeem to have underſtood by the term putrid, when applied to a fever, that kind of putrefaction which a dead body naturally undergoes. I am inclined to believe, that they derived the appellation, and their theory of the putrid fever, from the philoſophy of Ariſtotle, who in one of his problems aſſerts, " Omnia

quæ

An increased velocity of the circulating blood has been supposed to constitute the very nature and essence of a fever. But in some

quæ putrescunt calidiora fiunt." And hence the distinguishing characteristic of the putrid fever was, a sensation remarkably pungent and disagreeable, on touching the patient's skin.

Some modern writers have endeavoured to class continual fevers under the three denominations of the inflammatory, the slow nervous, and the putrid or malignant fever.

The first may be supposed to attend all inflammations, particularly of the membranes of the body; and so have for its inseparable symptoms, a full, quick, and sometimes an hard or oppressed pulse.

In the nervous fever the pulse is supposed to be much lower, and not so full, or hard; and while it is accompanied with but few symptoms of a violent inflammation, the nerves and brain seem principally affected.

Lastly, as to the putrid or malignant fever, I have already shewn, whence the epithet of putrid came first to be assigned to fevers: it is often here used to characterize a low fever, attended with very dangerous symptoms, and in contra-distinction to the inflammatory fever.

A malignant fever is sometimes understood to denote a fever produced from a violent contagion; but more properly

ſome fevers, of which we ſhall have occaſion to treat, the pulſe often gives no proof, no certain criterion of its nature, or indication

properly a fever accompanied with uncommon, violent, and dangerous ſymptoms. In like manner, when the ſmall-pox has only its proper and favourable ſymptoms, we call it a mild ſmall-pox; and on the contrary, when accompanied with purple ſpots, bloody urine, delirium, &c. we ſay it is a malignant ſmall-pox. A diſeaſe or fever is alſo ſaid to be malignant, when it makes its firſt attack with violent and dangerous or mortal ſymptoms; in which ſenſe that epithet is often uſed in the following ſheets.

Fevers are perhaps with much more propriety claſſed into intermitting, remitting, or continual. An intermitting fever is ſuppoſed to leave the patient perfectly free from all ſymptoms of the fever during its abſence or intermiſſion. A remitting fever is ſuppoſed to have irregular or imperfect intermiſſions; and a continual fever to have no perceptible intermiſſions.

Now each of theſe fevers, whether intermitting, remitting, or continual, may be either attended with the uſual and gentle ſymptoms, or they may be accompanied with violent, dangerous and fatal ſymptoms, and hence they may be denominated malignant fevers.

Again, in all of thoſe three kinds, if the bile, either pure or mixed, be copiouſly or frequently evacuated, by vomit or ſtool, the fever is ſaid to be bilious; and there

tion of danger in the difeafe. And it is my opinion, that a fever can no otherwife be defined, than as an indifpofition of the body, attended commonly with an increafe of its heat, a thirft, often a headach, and oftener

there is fometimes a pain, attendant on that evacuation, felt on the feat of the liver.

A yellow colour of the fkin is obferved not only in common agues, or intermittents, but frequently alfo in other fevers: fometimes denoting, as in contagious fevers, their malignant nature; at other times, as in fome Weft Indian fevers, an univerfal diffolution of the blood and humours; and frequently this fymptom accompanies gentle difcharges of the bile, and a difeafed liver.

Intermitting fevers are called quotidian, or tertian, according as they renew their attack every day, or every other day; and the term double tertian, as made ufe of in the general fenfe of thefe fheets, fignifies that the patient has two fits, one commonly flighter, the other more fevere, in the fpace of forty-eight hours.

I am fenfible thefe definitions of fevers are liable to objections, but they will at leaft explain the fcientific terms ufed in this publication, in the fenfe I wifh them to be underftood. The term epidemic fignifies the univerfality of a difeafe: Endemic its conftancy, in a particular place; and a Sporadic, its lefs frequent appearance.

a re-

a remarkable quickneſs of the pulſe; or at leaſt a great change from its natural ſtate; accompanied, for the moſt part, with various other ſymptoms of diſtreſs; and which, in a few days, will certainly terminate, either in a recovery, a remiſſion, or the death of a patient.

Theſe things being thus neceſſarily explained and defined, we have nothing further to premiſe to this little treatiſe, but a ſuggeſtion of our fears---That an inexperience of foreign countries, and an ignorance of the true cauſes of their ſickneſs, prove as fatal to Europeans, as the malignant diſpoſition of the moſt unwholeſome climate.

ADVICE

ADVICE TO EUROPEANS.

PART I.

Diseases incidental to strangers in different parts of the world.

CHAP. I.

Diseases in Europe and North America.

SECT. I.

An unhealthy season in England in the year 1765. *Of the most unwholesome seasons in the Netherlands, Hungary, Campania of Rome, the Islands of Sardinia and Minorca, and Gibraltar.*

WE shall begin our observations with the effects of heat and moisture in England.

The years 1765 and 1766 were distinguished by an uncommon appearance of

 intermit-

intermitting and remitting fevers, in most parts of England. One obvious cause was, the unusual frequency of the easterly wind.

An east-wind in England is said often to bring with it a fog from the sea: but the truth of the matter is, that this wind, in many places of the island, frequently raises a copious vapour from water, mud, and all marshy or damp places.

I do not remember to have met with any observations made on this exhaling quality of the easterly wind: though I have been an eye-witness of it. When the wind changes to the east, the mud sometimes sends up a vapour as thick as smoke; and there are two fish-ponds in my neighbourhood, one of fresh, the other of salt-water, which, upon the approach of an easterly wind, do sometimes also emit a dense vapour, as from a pot of boiling water.

In order to view this phœnomenon distinctly, the person should stand sheltered from the wind by a high wall, at about 100 yards distant

diſtant from the mud or ponds. If the ſun ſhines, when the wind changes to the eaſt, he will obſerve a conſtant ſteam of vapours riſing out of the ponds, from about five to ten yards heighth, while the air about him remains ſerene. As the vapour or fog ariſing from other places glides along the ſurface of the earth, and is brought by the eaſterly wind to the ponds, he will ſtill be able, for ſome time, to diſtinguiſh the vapours aſcending perpendicularly out of the ponds, from thoſe which are carried in an horizontal direction by the wind; eſpecially if the ſun continues to ſhine, though faintly.

This evaporating quality, of an eaſt wind ſeems to manifeſt itſelf alſo by its effects, both on the thermometer, and the human body: for a thermometer, hung over a damp piece of ground, during the fogs or exhalations ariſing from it, will often indicate a degree of cold below the freezing point, which I ſhould think can only be produced by a watery evaporation.

The chillneſs of the body, ſo ſenſibly perceived when in this ſituation, ſeems to me

to proceed from the ſame cauſe, and to produce nearly the ſame ſenſations, which the damp ariſing from the wet floor in a chamber communicates to thoſe, who happen to continue in it, whilſt it is in that humid ſtate.

But winds are not conſtant in their effects: as we have ſometimes warm weather with a north wind, and ſometimes very little heat with a wind from the ſouth, ſo the fogs attending an eaſt wind are not conſtant; neither is the evaporation which we have mentioned at all times to be perceived.

I am perfectly ſenſible that there may be a deception in theſe matters, as the cold or condenſing quality of an eaſterly wind may be ſuppoſed to render the vapours in the air viſible at that time. But even this ſuppoſition is liable to great objections, as our coldeſt north winds ſeldom or never produce ſuch an effect, but are commonly attended by ſerene dry weather.

But let that be as it will, an eaſt wind is uſually accompanied by a cold damp, and unwholeſome vapour, which is obſerved to affect

affect both animal and vegetable health, and in many places to give riſe and obſtinacy to intermitting fevers, as alſo to produce frequent relapſes.

In particular ſpots of the low damp iſland of Portſea, the ague frequently prevails, and ſometimes the flux, during the autumnal ſeaſon; and in ſome years they are much more frequent and violent than in others. It is obſervable, that their attack proves always moſt ſevere to ſtrangers, or thoſe who have formerly lived on a drier ſoil, and a more elevated ſituation.

The year 1765 was remarkable, not only for the long continuance of eaſterly winds, but alſo for an exceſſive degree of heat, which produced a more violent and general rage of thoſe diſeaſes, than had been known for many years. During the months of May, June, and July, we had ſeldom fewer at Haſlar-hoſpital than thirty or forty patients, labouring under regular Tertian agues, with perfect intermiſſions. Of theſe ſome were ſeized with it, on board the guard-ſhips that

lay in the harbour near the mud, but the greateſt number were of thoſe marines, who did duty at Portſmouth.

In the month of Auguſt the quickſilver in Farenheit's thermometer, often roſe to eighty-two degrees in the middle of the day. This conſiderable addition of heat, together with the want of refreſhing rains, greatly ſpread this fever, increaſed its violence, and in many places changed its form. At Portſmouth, and throughout almoſt the whole iſland of Portſea, an alarming continual, or remitting fever, raged, which extended itſelf even as far as Chicheſter. At the ſame time the town of Goſport, though diſtant only one mile from Portſmouth, enjoyed an almoſt total exemption from ſickneſs of every kind; whereas in the neighbouring villages, hamlets, and farm-houſes, a mild regular Tertian ague diſtreſſed whole families. The violence of the fever, with its appearances in a continued remitting or intermitting form, marked, as it were, the nature of the ſoil. In Portſmouth its ſymptoms were bad, worſe at Kingſton, and ſtill

more dangerous and violent at a place called Halfway-houſe *. In the large ſuburb of Portſmouth, called the Common, it ſeemed to rage with more violence than in the town, ſome parts excepted; but even whole ſtreets of this ſuburb, together with the houſes in the Dock-yard, eſcaped its attack.

The marines, who were three times a week exerciſed early in the morning on South-Sea Beach, from the effect of the ſtagnant water of an adjoining moraſs, ſuffered much.

Half a dozen of them at a time were frequently taken ill in their ranks, when under arms; ſome being ſeized with ſuch a giddineſs in the head, that they could ſcarcely ſtand, while others fell down ſpeechleſs; and upon recovering their ſenſes, complained of a violent head-ach.

* A ſtreet ſo called, about half a mile from Portſmouth, where ſcarcely one in a family eſcaped this fever, which generally made its firſt attack with a delirium. The ſituation of thoſe houſes is ſo remarkably bad and damp, that the inhabitants are often afflicted with agues and fevers.

When such patients were received into the hospital, I observed that some few had a regular ague, but that far the greater number laboured under a remitting fever, with imperfect intermissions, though sometimes, indeed, there was no perceptible remission for several days. A constant pain and giddiness of the head were the most inseparable and distressing symptoms of this disease. Some were delirious, and a few vomited up a quantity of bile, but in all, the countenance was yellow.

A long continuance of the fever produced either a dropsy or a jaundice, or both; even a slight attack reduced the most robust constitution to a state of extreme debility, and this weakness, together with the giddiness, continued long after the fever was gone.

A scabby eruption now and then made its appearance on the lips, and the corners of the mouth: but dry itchy spots over the whole body, resembling much the common itch, and seeming to partake somewhat of the nature of that disease, were more frequently observed in several patients at Portsmouth, where

where there was not the leaſt reaſon to ſuſpect any infection.

The univerſality of this fever, together with its uncommon ſymptoms, were at firſt alarming; but when the lancet was withheld, and the bark plentifully given in large dozes, few died*. It decreaſed with the heat of the weather, and in the winter appeared chiefly in the form of a quartan ague. But I ſhall have occaſion to make further mention of it in another place.

This much may here ſuffice for a brief deſcription of that autumnal fever of Great Britain, which in its utmoſt violence prevail-

* When the head-ach or giddineſs were very violent, and the pulſe neither full nor ſtrong, I ordered a bliſter to the back, and endeavoured to reduce the fever into an intermitting form, by giving half a grain of tartar emetic, with a few grains of nitre every ſix hours.

Thus a perfect intermiſſion was often obtained, and the bark was then adminiſtered without delay. Vomits were uſeful, as was alſo the tinctura ſacra given as a purgative during the remiſſions. A bliſter to the back ſeldom failed to relieve the violent head-ach, which afflicted the patients during the remiſſions of this fever.

ed,

ed, not only in Hampshire, but in many other parts of this island, and which seemed to have been produced this year, by the unusual and excessive heat of the summer, together with an undiluted putrid moisture in the soil, and the long duration of easterly winds.

Let us now pass over to the continent, and take a view of the state of diseases in other parts of Europe at this period. In the Low Countries, particularly Zealand, the most obstinate diseases of this kind frequently rage, and do particularly distress strangers.

Doctor Wind, in his translation into Dutch of my Essay on preserving seamen *, has, among other judicious remarks, the following observations relative to what I have there said of tertian fevers.

He observes, " that at Middleburgh, the " capital of West Zealand, where his fa- " ther and himself had practised twenty- " eight years, a sickness generally reigns " towards the latter end of August, or the

* Aanmerking XI.

" begin-

" beginning of September, which is always " most violent after hot summers.

" It makes its appearance after the rains, " which generally fall in the latter end of " July; the sooner it begins the longer it " continues, being checked only by the " coldness of the weather.

" Towards the end of August, and the " beginning of September, it is a continual " burning fever, attended with a vomiting " of bile, which is called the gall-sickness. " This fever, after continuing three or four " days, intermits, assumes the form of a " double tertian, and leaves the patient in " a fortnight, or perhaps sooner; stran- " gers, who have been accustomed to " breathe a dry pure air, do not recover so " quickly.

" Foreigners in indigent circumstances, " such as the Scotch and German soldiers, " who are garrisoned in the adjacent places, " are apt, after those fevers, to have a swel- " ling in their legs, and a dropsy; of which " distempers many die.

" Fluxes

" Fluxes are frequent in September and " October; towards the latter end of which " indeed the air becomes more healthy, and " then few diseases prevail. At this time, " those who have laboured under the fever " sometimes suffer a relapse; but then it is " into a simple tertian, which seldom con- " fines the patient."

The Doctor further observes, " That " those diseases are the same with the double " tertian fevers, common between the tro- " pics. Such," says he, " as are seized " with the gall-sickness, have, at first, some " flushes of heat over the body, a loss of " appetite, a white foul tongue, a yellow " tinge in the eyes, and a pale colour in the " lips. An emetic, administered before the " gall-disease appears, is serviceable. Bleed- " ing is seldom requisite, unless in persons " of a plethoric habit. The gall-sickness " is removed chiefly by cooling medicines; " but, in October, the tertian agues cannot " be cured without the bark.

" Such as live well, drink wine, and have " warm cloathing and good lodgings, during

" the

"the fickly feafon, do not fuffer fo much "as the poor people: however thofe difeafes "are not infectious, and feldom prove mor- "tal to the natives."

It would greatly exceed the intended length of this Effay, fhould I attempt to enumerate fuch fimilar difeafes as prevail annually in various other countries of Europe during the autumn. I have elfewhere had occafion to mention the epidemical diftempers which rage in Hungary, and in the Campania of Rome, during the months of July, Auguft and September. The former, on account of its infalubrity, has been, with propriety, termed the grave of the Germans; and with regard to the latter, Lancifius, phyfician to pope Clement the XIth, furnifhes us with a very ftriking proof of the malignant quality of its air.

Lancifius relates, that thirty gentlemen and ladies of the firft rank and diftinction in Rome, having made an excurfion, upon a party of pleafure, towards the mouth of the Tyber, upon the wind fuddenly fhift-

ing,

ing, and blowing from the south over the putrid marshes, twenty-nine were immediately seized with a tertian fever, one only escaping.

But before we leave Europe, it may be worth while to take a view of such diseases as prevail in some unhealthy spots of its most southern parts, where the heat of the weather may be supposed to have great influence. For this purpose, the island of Sardinia shall be selected; of the diseases of which I do not remember to have met with any printed account.

This island is annually visited with an epidemical sickness, which rages from June to September, and is called by the natives the Intemperies. In some summers, there is a want of rain for or four five months; and then it is that this sickness exerts its utmost violence, being always more fatal in some places than in others, and particularly so to strangers. Of this the English had lately a very severe proof.---In the month of August, 1758, Admiral Broderick, in the

Prince

Prince ſhip of war, anchored in the bay of Oriſtane, where twenty-ſeven of his men, ſent aſhore on duty, were ſeized with the epidemical diſtemper of this iſland; twelve of them in particular, who had ſlept on ſhore, were brought on board delirious.

All of them in general laboured under a low fever, attended with great oppreſſion on the breaſt, and at the pit of the ſtomach; a conſtant reaching, and ſometimes a vomiting of bile; upon which a delirium often enſued. Thoſe fevers changed into double tertians, and afterwards terminated in obſtinate quartan agues.

The prior of a convent making a viſit to the Engliſh officers, informed them,—That the intemperies of the iſland was a remitting or intermitting fever, that he himſelf had ſuffered ſeveral attacks of it, and had taken large quantities of the bark and ſnake-root, but had always reaped the greateſt benefit from a change of air.

He further obſerved, that during thoſe ſickly months, perſons of rank left their country

country seats, and resided in cities; while many poor people, in some particular parts of the island, who could not afford to take that precaution, were annually cut off by this epidemical sickness. The remedy used by the peasants is an emetic, administered immediately upon the first attack of the disease: this they prepare for themselves by quenching some pieces of glass, heated in the fire, in a weak wine; which, thus medicated, first acts as a vomit, and afterwards produces a copious sweat.

Sardinia was formerly so remarkable for its unwholesome air, that the Romans used to banish their criminals thither; and it is at present but thinly peopled, owing to the frequent mortality occasioned by this annual sickness: for although it is about 140 miles long, and in several places 75 broad, yet it is computed, that the whole of its inhabitants does not exceed 250,000; an inconsiderable number, when compared with the inhabitants of the lesser, but more pleasant and healthful island of Corsica, in its neighbourhood.

It is worthy of remark, that in the English ſhip, which at this time lay only two miles diſtant from the land, none were taken ill but ſuch as had been on ſhore, of whom ſeven died.

As to the Engliſh poſſeſſions in thoſe ſouthern parts of Europe, obſtinate, intermitting, and remitting fevers, as alſo the flux, are in ſome years prevalent in the iſland of Minorca from June to November. At Gibraltar the air is purer, and the ſituation more healthy.

SECT. II.

The climate of Canada, Newfoundland, Halifax, New England, Maryland and Virginia. Seaſons of ſickneſs in South Carolina, Georgia and Florida. Of Mobile and Penſacola.

LET us now paſs over to America, and obſerve the various diſeaſes which attack ſtrangers in that part of the globe. We ſhall begin with the more northern parts of that continent.

Since the extensive country of Canada has been in the possession of the English, our troops and settlers there have been remarkably healthy, if we except the great mortality occasioned by the scurvy, in the winter of the year 1759.

A surgeon, who practised long in different places of that country, and especially at Quebec, informs me, that true pleurisies, and other inflammatory disorders, were the genuine produce of the cold air of that climate; but that low, bilious and intermitting fevers were scarcely ever known there.

The surprising healthy state of the ships companies who annually visit the banks of Newfoundland, and the long-continued health enjoyed by those who pass the winter at Halifax, are proofs that an intense degree of cold, properly guarded against, produces but few diseases, and scarcely ever the fevers which are the subject of this treatise. It is a constant observation, that the men belonging to the Newfoundland fleet return every autumn to England, with much more healthy, and much more robust constitutions than when they left it.

The

The climate of New England is ſimilar to that of Great Britain. But travelling to the ſouthward, in Maryland or Virginia, where the heats are greater, and the ſoil more moiſt, eſpecially on lands not cleared, we find agues, fevers and fluxes very diſtreſſing to ſtrangers; though the natives in general are pretty healthy, and ſometimes long lived.

In the latitude of South Carolina, we find theſe diſeaſes much more obſtinate, acute and violent. In that colony, eſpecially during the growth of the rice, in the months of July and Auguſt, the fevers which attack ſtrangers are very anomalous, not remitting or intermitting ſoon, but partaking much of the nature of thoſe diſtempers which are ſo fatal to the newly arrived Europeans in Weſt Indian climates. The ſame may be ſaid of Georgia and Eaſt Florida, during theſe two months; but in Weſt Florida, the diſeaſes of ſtrangers approach ſtill nearer to thoſe of our Weſt Indian iſlands.

At Penſacola, where the ſoil is ſandy, and quite barren, the Engliſh have ſuffered much

by ſickneſs: ſome, for want of vegetables, died of the ſcurvy; but a far greater part of fevers. The exceſſive heat of the weather has ſometimes produced in this place a mortal ſickneſs, ſimilar to that which in the Weſt Indies goes under the name of the yellow fever: this, in the year 1765, proved very fatal to a regiment of ſoldiers ſent from England, unſeaſoned to ſuch climates, from the unfortunate circumſtance of their being landed there in the height of the ſickly ſeaſon. This ſickneſs raged chiefly in the fort, where the air in the ſoldiers barracks, which were ſheltered from the ſea-breeze by the walls of the fort, was extremely ſultry and unhealthy.

It is worthy of remark, that during the fatal rage of this fever at Penſacola, ſuch as lived on board the ſhips in the harbour eſcaped it. Penſacola is however of late eſteemed more healthy than Mobile, where intermitting fevers prevail in the months of July, Auguſt, and September. For which fevers, both in this and our other American colonies, we ſhall in general obſerve, that the bark has been found a ſovereign remedy,

and

and ought to be adminiftered on the firft remiffion of the fever, as on its early adminiftration will greatly depend the preservation of the patient's conftitution.

Having now advanced near the tropic, before we proceed to defcribe the difeafes in the Weft Indies, it will beft fuit the purpofe of this effay, and ferve more fully to illuftrate the nature of thofe maladies, that we direct our courfe to Africa, and afterwards extend our relation to India, referving the account of fuch as afflict ftrangers in the Weft Indies to the latter part of thefe fheets.

CHAP. II.

Diseases in Africa.

SECT. I.

Algiers, Tunis, Tripoli, Morocco, Egypt.

THE state of good health commonly enjoyed by the subjects of almost all European nations, who live in a state of slavery, in the kingdoms of Algiers, Tunis, and Tripoli, and in the empire of Morocco, leaves us no room to doubt of the salubrity of the northern parts of Africa. Even the most southern districts in the empire of Morocco are far from being unhealthy; Europeans there not only living to a great age, but commonly enjoying good health. The healthfulness of that climate clearly appeared from the unimpaired constitutions and healthful countenances of the late crew of his Majesty's ship Litchfield, of 50 guns, who,

who, in the year 1758, were ſhipwrecked on that coaſt, and after remaining at Morocco upwards of ſeventeen months, returned to England in perfect health.

We muſt not however include Egypt among the number of the kingdoms in Africa, where Europeans enjoy ſuch perfect health, the lower part of this country being rendered unwholeſome by the annual inundation of the Nile, and being ſurrounded on three ſides by large and extenſive deſerts of ſand, is thereby expoſed to the effects of that noiſome vapour, which during the ſummer months, ariſes from ſultry hot ſand. The diſeaſes produced from theſe cauſes *, are

* Some writers, who have attempted to account for the origin and cauſe of the true plague in this country, do not ſeem to have been well acquainted with the nature of the winds and ſeaſons in Egypt. Was it not for the inundation of the Nile, this country, in all probability, would have been rendered uninhabitable during the ſummer months, not on account of the filth of Grand Cairo, but for another reaſon, viz. the hot winds from the deſerts, which often begin here in the middle of April, and continue to blow for 30 or 40 days. The heavy dews which then fall in the night, ſerve

are confined to certain months, beginning in May, and commonly ceaſing in September. It is during theſe months, but eſpecially towards the latter end of ſummer, that ſtrangers are apt to be ſeized with bilious diſorders, fluxes, and fevers *, ſimilar to thoſe in the ſouthern parts of Africa, of which we are next to treat.

ſerve in ſome meaſure to refreſh the air: but when, by the increaſing heat of the ſummer, the Samiel winds have acquired a peſtilential violence, and a killing quality, then a ſheet of water is, by the hand of Providence ſpread over Egypt.

* See Proſper Alpinus, Thevenot, Bruin, Paul Lucas, and others who have given accounts of Egypt.

SECT. II.

Coaſt of Guinea. Its ſoil. Periodical rains. Its heat meaſured. Its healthy and ſickly ſeaſons. Quantity and effects of the rains. Surpriſing effects of the harmattans. Comparative degrees of health in the different European ſettlements on this coaſt. The diſeaſes which attack Europeans in Guinea. The waters of the country examined. A propoſal to prevent the Guinea worm. Whence the violence and mortality of diſeaſes in Guinea. A journal kept in a voyage to Catchcou. Medical directions.

AFTER paſſing the great river Senegal, we come to Negroland, or what is commonly called Guinea. The inland parts of this country, except where the courſe of a few rivers has conducted the Europeans, are little known to us, being viſited by no Chriſtian travellers but the Armenians.

They are the greateſt travellers in the world, and the only people known to have lately

lately visited the inland parts of Ethiopia, merely out of curiosity: but as they have published no relations of that country, Europe has reaped very little benefit by their travels. Several of them have made their appearance at Cape Corso Castle, after having travelled through the Upper Egypt and Nubia, quite across the whole continent of Africa; but for want of knowing the European languages, they could not make themselves understood, further than by the draughts they had made of several large cities through which they passed.

At a distance, this wide extended coast appears in most places to be a flat country, covered with low-suspended clouds. Upon a nearer approach, there are generally perceived heavy dews, which fall in the night, and the land is every morning and evening wrapped up in a fog. Upon examining the face of the country, it is found clothed with a pleasant and perpetual verdure, but altogether uncultivated, excepting a few spots, which are generally surrounded with forests or thickets of trees, impe-

 netrable

netrable to refreſhing breezes, and fit only for the reſort of wild beaſts.

The ſoil, like all other low lands, is either marſhy, or watered with rivers or rivulets, whoſe ſwampy and oozy banks are over-run with ſedges, mangroves, and the moſt noxious weeds, on which there is a quantity of ſlime and filth, that ſends forth an intolerable ſtench, eſpecially towards the evening.

In this country, as in all others between the tropics, the ſun is vertical twice a year, and on his return from the northern tropic, is generally attended with heavy and continual rains. Theſe rains aſſuage the inſufferable heat, and allay the peſtiferous vapours, which in all probability might, in many places between the tropics, ariſe from the earth, but particularly from the ſands, and by the powerful influence of a twice vertical ſun, might become deſtructive to animal life. It appears by a late obſervation, that at Senegal, the moſt northern extremity of Guinea, in December 1763, the heat was 93 degrees, when meaſured by

Farenheit's

Farenheit's thermometer, and 98 at Sierra Leona, when the ſun had made its moſt diſtant retreat from thoſe places. Hence we may in ſome meaſure judge what might be the effects of the perpendicular rays of the returning vertical ſun on the already heated ground, if thoſe countries were not ſheltered from their influence, by a thick clouded atmoſphere, and an almoſt inceſſant rain. Moſt tropical countries have, properly ſpeaking, only two ſeaſons, the wet and the dry; the former being commonly of about four months continuance, and the ſeaſon of ſickneſs; whereas, for many months in the dry ſeaſon, moſt parts of this country are equally healthy and pleaſant with any in the world.

As in Europe the winter ſometimes ſets in ſooner, ſometimes later; in ſome years is very ſevere, in others more mild; ſo in tropical countries, both the commencement of the rainy ſeaſon, and the quantity of rain which falls, vary in different years. At Senegal, the rains commence about the beginning of July, and continue till the end of October, though in ſome ſeaſons they appear

appear a few weeks earlier, in others a few weeks later. At Gambia they begin about a fortnight or three weeks ſooner than at Senegal, and down the coaſt, their commencement becomes more early in proportion as the latitude decreaſes.

The quantity of rains which falls during the wet ſeaſon, is almoſt incredible. By obſervations made at Senegal, 115 inches depth of rain were found to fall in theſe four months, a quantity equal to that which falls in England during the ſpace of four years.

It is no leſs remarkable, that this great change in the weather has little or no effect on the barometer. In this inſtrument, when in Europe, the variations of the mercurial column are about three inches; but in the torrid zone, its variations are ſcarce perceptible. It is there but little affected by the moſt violent hurricane or the heavieſt rain; the quickſilver having been ſeldom obſerved to riſe above four-tenths of an inch.

There

There are many difficulties which occur in assigning a satisfactory reason, why in some countries, as in those between the tropics, heavy and continual rains should produce sickness, while in other places, especially in the southern parts of Europe, a want of rain for two or three months in summer brings on diseases almost similar.

In such an uncultivated, swampy country as Guinea, one would hardly expect to hear of a season of health; but what I have asserted is an experienced fact, with respect to newly arrived Europeans. For notwithstanding such as constantly reside there retain, through all the seasons of the year, evident marks of the insalubrity of the climate, yet the indispositions under which they labour in the dry months, are generally the remains of their former illness, or the consequences of what their constitutions had suffered during the sickly season.

Upon this occasion I cannot help observing, that there is hardly a physical cause which can be assigned for the production of any disease, that will not admit of some excep-

exceptions: thus not only the woods and moraſſes in Guinea are tolerably healthy in the dry ſeaſon, if we except Old and New Calabar, Benin, and ſuch like places; but a few inſtances might be produced, of towns ſurrounded with marſhes and a foggy air, where the inhabitants ſuffer no inconvenience from their ſituation, even during the rainy ſeaſon: as an example, take New Orleans in Louiſiana.

Do the impetuous torrents of water poured from the clouds during the rainy ſeaſons in tropical countries, contain what is unfriendly and injurious to health? This much is certain, that in Guinea many of the principal negroes, and eſpecially the Malatto-Portugueſe, take the utmoſt precaution to avoid being wet by thoſe rains, eſpecially by ſuch as fall firſt. At the ſetting in of the rainy ſeaſon, they generally ſhut themſelves up in a cloſe well-thatched hut, where they keep a conſtant fire, ſmoke tobacco, and drink brandy, as preſervatives againſt the noxious quality of the air at that time. When wet by accident with the rain, they immediately plunge themſelves

into

into ſalt-water, if near it. They generally bathe once a day, but never in the freſh-water rivers when overflown with the rains, preferring at ſuch times, for this purpoſe, the water of ſprings. The firſt rains which fall in Guinea, are commonly ſuppoſed to be the moſt unhealthy; they have been known, in forty-eight hours, to render the leather of the ſhoes quite mouldy and rotten: they ſtain cloaths more than any other rain, and ſoon after their commencement, the ground, even in places formerly dry and parched, ſwarms with frogs. At this time ſkins, part of the traffic at Senegal, quickly generate large worms, and it is remarked that the fowls, which greedily prey on other inſects, refuſe to feed on theſe. It has been further obſerved, that woollen cloth, wet in thoſe rains, and afterwards hung up to dry in the ſun, have ſometimes been found full of maggots in a few hours.

Is the ſickneſs of thoſe ſeaſons to be aſcribed to the intenſe heat of the then almoſt vertical ſun, which frequently, for an hour or two at noon, diſpels the clouds and

with

with its direct beams inftantly changes the refrefhing coolnefs of the air into a heat almoft infupportable?

Further, as the feafon of thofe fudden and terrible ftorms called the hurricanes, in the Eaft and Weft Indies, and tornadoes on the coaft of Guinea, partly coincides with that of the rains; do thefe dreadful tempefts in any meafure contribute to produce the ficknefs prevailing at thofe times? It was remarkable one year at Senegal, that in the beginning of the rainy feafon, in the night fucceeding one of thefe tornadoes, a great number of the foldiers, and two-thirds of the Englifh women, were taken ill, this garrifon having before been uncommonly healthy.

Laftly, Is it not more probable, that as in fome of thofe countries the earth, for fix or eight months in the year, receives no moifture from the heavens but what falls in dews, which every night renew the vegetation, and reinftate the delightful verdure of the grafs, that the furface of the ground in many places becomes hard and incruftated

with a dry ſcurf, which pens up the vapours below, until, by the continuance of the rains for ſome time, this cruſt is ſoftened, and the long pent up vapours ſet free? That theſe dews do not penetrate deep into the ſurface of the earth, is evident from the conſtant dryneſs and hardneſs of ſuch ſpots of ground in thoſe countries as are not covered with graſs and other vegetables. Thus the large rivers in the dry ſeaſon being confined within narrow bounds, leave a great part of their channel uncovered, which having its moiſture totally exhaled, becomes a ſolid hard cruſt; but no ſooner the rains fall, than by degrees this long parched up cruſt of earth and clay gradually ſoftens, and the ground, which before had not the leaſt ſmell, begins to emit a ſtench, which in four or five weeks becomes exceedingly noiſome, at which time the ſickneſs is generally moſt violent.

In the Eſſay on preſerving ſeamen, I have already given an account of the malignant and fatal vapours called harmattans, and the ſeaſons in which they infeſt ſome places on this coaſt. But I have ſince found ſome

perſons who cannot, without difficulty, conceive, that a damp vapour, or fog, ſhould open crevices in the wood, and make the boards ſhrink from one another.

Upon this occaſion, I ſhall only ſay, that facts ſo well atteſted are too ſtubborn to bend to theory. A gentleman, who had long reſided at Cape Coaſt Caſtle, informed me, that during the time of this fog, being in the upper chambers of the fort, the boards of the floor ſhrunk ſo much, that he could diſcern the candles burning in the apartments below him, there being no plaiſter-cielings uſed in thoſe hot countries; and that he could then even diſtinguiſh what people were doing in the apartments below; the ſeams of the floor having opened above half an inch while the fog laſted, which afterwards, upon its being diſpelled, became cloſe and tight as before. I have already obſerved, that providentially thoſe fogs prove fatal only in ſome years, and even then only in particular places.—But to return from this digreſſion.

If from the foregoing accounts we form to ourselves an idea of a low, uncultivated, woody country, laid under water, at a time too when the heat of the air far exceeds any degree of heat ever experienced in England, we shall not be surprised to find, that such as are unaccustomed to the climate seldom escape a fit of sickness at this season. And if we further take into consideration, that the only spots of ground cleared in this country are low, damp, and annually overflown (such being only proper for the cultivation of rice, the common food of the natives): and if still to all this we add the blameable inattention of the Europeans themselves to matters of this sort, the violence and mortality of their distempers will be easily accounted for.

It is not uncommon, in many trading factories, to meet with a few Europeans, pent up in a small spot of low, damp ground, so entirely surrounded with thick woods, that they can scarcely have the benefit of walking a few hundred yards, and where there is not so much as an avenue cut through any part of these noxious woods

for the admiſſion of wholeſome and refreſhing breezes. The Europeans have alſo unfortunately fixed ſome of their principal ſettlements either on low, inland, unperflated and uncultivated ſpots, the foul banks of rivers, or near their ſwampy and oozy mouths, or upon ſalt-marſhes, formed by the overflowing of the ocean; and in many places the putrid fiſh, ſcattered on the ſhore by the Negroes, emit ſuch noiſome effluvia, as prove very injurious to the conſtitution.

Notwithſtanding what has been ſaid, I think it will hardly admit of doubt, that if any tract of land in Guinea was as well improved as the iſland of Barbadoes, and as perfectly freed from trees, ſhrubs, marſhes, &c. the air would be rendered equally healthful there, as in that pleaſant Weſt Indian iſland.

At preſent the Engliſh ſettlements on the rivers Senegal and Gambia are remarkably unhealthy; but otherwiſe, the northern, or what are called the windward parts of this coaſt, are the moſt healthy, eſpecially in places or factories near the ſea. Thus the

island of Goree, the town of Sierra Leon, the fort of Dixcove, Sucondee, Cape Coast, and all the English, Dutch and Danish forts on the Gold Coast, are, comparatively speaking, healthier than the country to leeward of them.

The air in Whydaw is bad, but much worse, nay in a manner pestilential to Europeans, in the Gulph of Benin, even as far as Cape Lopez. As to the Portuguese settlements to the southward of that Cape, we observe, that St. Paul de Loanda, the capital of all their dominions in that part of the world, is said to be tolerably healthy, considering the climate; whereas the kingdom, and especially the city of Benguella, are remarkable for a pestiferous air.

The most healthy place, or the Montpelier, for its air, of the Portuguese settlements in that division of the globe, is the town of St. Salvadore. Notwithstanding it lies 150 miles up the river Congo, or Zaire, and within six degrees of the equator, yet, from its being situated on a hill, and the neighbouring country being cleared of the

natural woods and thickets, its inhabitants not only breathe a temperate and pure air, but are in a great meaſure exempted from all the plagues of an unhealthy climate.

The leſs dangerous diſeaſes which attack Europeans in Guinea, are, the dry belly-ach, and a worm which breeds in the fleſh. This is a white, round, ſlender worm, often ſome yards long, lodged in the interſtices of the muſcles, under the ſkin of the legs, feet, or hands; where it occaſions a ſwelling, reſembling a boil, attended with great pain, until its little black head appears in a ſmall watery bladder on the head of the boil. When this bladder breaks, the head of the worm is to be ſecured by tying it to a ſmall roll of linen, ſpread with plaiſter; and part of the worm is once or twice a day to be gently drawn forth, with care not to break it, and wrapped round this roll, until it be brought away entire; then the ulcer generally heals ſoon; but if part of the worm breaks off, the part remaining in the fleſh can be ejected only by painful and tedious ſuppurations in different places.——Dr. Rouppe obſerves, that the diſeaſe of the

Guinea-worm is infectious. It may at least be prudent in Europeans not to lie in the same apartments, and to avoid too free a communication with such Negroes as are afflicted with those worms. These diseases may be observed at any season of the year, and seldom prove mortal. But the diseases most fatal to Europeans, are fluxes and fevers. The latter make their appearance in the rainy seasons, and have always been observed to be most fatal to European women.

I am informed by a surgeon, who practised some years at Senegal, that for several months during the dry season, the country was as healthy and pleasant as any in the world; but soon after the rainy season began, a low malignant fever spread itself among the Europeans. It seemed to proceed from a poison, as it were, got into the stomach, beginning with severe reachings, and often with a vomiting of bile. Upon its first attack in this way, he administered a few grains of emetic tartar, and found, if this medicine operated both upwards and downwards, it commonly relieved, and

often

often entirely abated all the ſymptoms: but this lucid interval continued only a ſhort time; for commonly in ſix hours afterwards the fever and vomiting returned, accompanied with a delirium. The adminiſtration of a ſecond emetic did not produce ſo good an effect, or a remiſſion of the fever. A ſecond remiſſion was however ſometimes accompliſhed, by the Julepum è Camphorâ Pharmacopœiæ Londinenſis, and the Hauſtùs Salinus Pharmacopœiæ Pauperum Edinburgenſis; and then the bark was adminiſtered without delay. Thoſe who were very plethoric were bled: but this operation gave only a momentary relief to the pains of the head and back. In ſome the fever was very malignant, and the patient died ſoon after its attack, the corpſe appearing of a yellow colour, and the ſkin ſtained with livid ſpots or blotches. He ſeldom applied bliſters, until the patient was comatoſe, and then he found good effects from them.

The bark ought to have been adminiſtered immediately after the firſt remiſſion of the fever was procured by the vomit.

A more

A more early application of blisters, in such low fevers, is also adviseable.

An inflammatory fever is seldom observed during the season of sickness in this part of the world; though the flux may sometimes make its appearance at other seasons, and is a distemper very common, and often fatal to Europeans in Guinea. The most mortal epidemic, however, is that low, malignant fever of the remitting kind, which rages only in the wet season *.

The

* The following is an accurate description of this fever, which raged on board the Weasel sloop of war, during the wet season at Gambia, in August 1769, taken from the journal of the ingenious Mr. Robertson, surgeon of that ship.

The symptoms are arranged according as the fever appeared in a more mild or more malignant form.

In its mildest form, it began with a head-ach, a sickness at the stomach, thirst, universal uneasiness and pain, especially in the back and loins. The pulse is small and quick, the skin hot and dry. In the morning these complaints were greatly relieved, in the evening exasperated, which happened through the whole course of the fever.

About

The dry belly-ach is the fame difeafe here as in the Weft Indies; but the Guinea-worm feems in a manner moft peculiar to Africa.

About the third day, the violence of the fymptoms increafe, the tongue now becomes white and foul, the fpeech weak and faultering, the thirft infatiable, the pulfe foft and weaker than natural.

On the fourth day, the patients lofe the fenfation of tafte, and towards the evening become very hot and reftlefs.

On the third night, there was a gentle moifture on the fkin, likewife on this night feveral had profufe fweats.

On the fifth day, the weaknefs is increafed. Hitherto the patients had not been confined to bed in the day-time.

On the fixth, frightful dreams, and an incipient delirium prevent them from fleeping.

On the feventh they grow worfe; their tongues are brown, dry and chopped, the delirium is increafed, with reftleffnefs and univerfal uneafinefs.

On the eighth, the remiffions and exafperations happen as ufual.

The ninth is the worft day; in the morning they are cool, but the fymptoms foon return with increafed violence.

Their pulfe, fince the fixth day, has been very irregular, and in general weaker than natural.

After

Africa. It has been ſuppoſed to proceed from a bad quality in the water of the country,

After this day there is a perfect remiſſion of the fever, but towards night they become a little feveriſh till the ſeventeenth. The criſis of the fever is a gentle purging.

In the more malignant form of the fever, all the ſymptoms are more violent; there is from the beginning, a great proſtration of ſtrength and ſpirits, univerſal uneaſineſs, giddineſs, violent reachings, a ſtrong, quick, and ſometimes a hard pulſe, a white and dry tongue: ſometimes a ſevere purging with gripes, at other times a bad cough, a violent pain and ſtricture over the eyes, and coſtiveneſs.

On the ſecond day there is no alteration for the better.

About the third day, in the morning, there is a ſmall remiſſion, but in the evening they again turn ill.

On the fouth, ſcarce any remiſſion could be perceived.

When a remiſſion happened, it did not laſt above three hours; the patients ſeemed a little cooler, but their thirſt was not abated, and the palms of their hands, and the ſoles of their feet glowed with heat. Anxiety, reſtleſſneſs and frightful dreams prevent them from ſleeping. Their memory begins to fail. The tongue in a few is white and furred, in moſt dry and chopped. Bilious vomitings and frequent looſe fetid ſtools have attacked ſeverals; but thoſe who were coſtive in the beginning ſtill remain ſo.

Fifth,

country, which is in general owing to the woody, marſhy ſoil.

In

Fifth, in the night ſeveral were delirious: the tongues of ſome are become black, and the teeth furred.

Sixth, in the morning a few of them had a ſmall remiſſion, but all had been very ill in the night. The pain of the back and loins, giddineſs, and a pain at the bottom of the orbit of the eyes, are ſtill very troubleſome.

On the ſeventh, the delirium is more general, and in ſome the countenance is quite yellow, a wild look, ſcalding of the urine (not from bliſters) an inclination to vomit, and looſe ſtools, are frequent this day.

Eighth, A few after ſevere bilious vomitings and purgings, which ſtained like ſafron, had purple blotches on the face and neck. In one patient a ſwelling of the parotid gland appeared. Delirium, ſtupor, cold ſweats, convulſive tremors and catchings, twitchings of the tendons, an involuntary diſcharge of urine and fœces, are frequent this day. The pulſe is quite irregular.

Ninth, all the bad ſymptoms continued. The blotches roſe above the ſkin, and ſoon diſappeared; the patients thought themſelves better while they remained on the ſkin. A bleeding at the noſe occurred in one of them, which alſo tinged yellow.

Tenth, a few had a ſlight remiſſion.

Eleventh.

In order to know the contents and qualities of these waters, I procured those of Senegal,

Eleventh, The dangerous symptoms continued; a large ecchymosis appeared on one patient on the right side of the face and neck a little before his death.

Thirteenth, their countenances were much more yellow, and they were seized with a purging, but not attended with gripes. One of them had a gentle and universal perspiration. He was afterwards cooler and his complaints were relieved. Among others, the bad symptoms still remained: one was seized with faintings.

Fourteenth, the purging was attended with gripes: the patients continued cooler but very weak, and the bad symptoms still prevailed with the subsultus tendinum.

Fifteenth, the bad symptoms continued: the parotis was opened. Those who had the purging and yellow countenance, were better: one had the piles.

Sixteenth and seventeenth, all continued better, except one man.

Eighteenth, a man who, for two days, had appeared to be in a very dangerous state, fell into a sound sleep, followed by an equable perspiration, which proved a happy crisis.

In one patient the fever continued till the twenty-first day, but it had been very mild during its whole course.

As to the critical days and symptoms that were most dangerous in this fever.

On

Senegal, Gambia, and Sierra Leon, which were ſent me in bottles, well corked and ſealed.

On the third day in the evening a perfect remiſſion was procured in one caſe.

In another caſe, a remiſſion of thirty hours was obtained on the fifth day in the morning; but the fever afterwards returned for twelve hours with increaſed violence;

On the eighth day four died, and one parotis formed. In the mildeſt ſtate of the fever, an imperfect criſis happened on this day.

One perſon died on the tenth, and on the eleventh three.

On the thirteenth one died, and many were ſeized with purgings, which proved a favourable criſis. In one an equable perſpiration broke out, which was ſucceeded on the fourteenth by a gentle purging, and proved ſalutary.

On the fourteenth alſo, another patient died, who had had bleedings at the noſe, and blotches on the neck.

On the fifteenth, the parotis was ripe for opening.

On the eighteenth, an unexpected criſis happened in a very dangerous caſe, by means of a ſound ſleep and free perſpiration. Coſtiveneſs, frequent diſcharges of bile, both by ſtool and vomiting, bleedings from the noſe, blotches, a brown, rough and huſky tongue, a ſmacking of the lips, wildneſs of the countenance, and

ſealed. Upon opening theſe bottles, I found the water in all of them putrid, but the

and deſpondency of mind, were in every caſe mortal. A cough proved fatal in two caſes out of three, which third was the remarkable caſe that came to a criſis on the eighteenth day. An involuntary diſcharge of urine and fœces, except in two caſes, was always followed by death; in the firſt caſe, there was a ſwelling of the parotid gland; in the ſecond, an unexpected criſis happened on the eighteenth day.

A pain either over the eyes, or deep within the orbit, faintings, drinking greedily and in large draughts, were dangerous ſymptoms.

Upon feeling the pulſe, a diſagreeable ſenſation always remained on the fingers, eſpecially if there was any moiſture on the patient's ſkin; but where the perſpiration proved critical they did not occur.

Moſt of theſe patients were vomited and purged when firſt taken ill. The mortality of the fever, it is ſuppoſed, was greatly leſſened by the ſhip leaving Gambia, and being at ſea. The captain, who was ill of it took ſeven ounces of the bark. Hence we may in ſome meaſure judge how many pounds of that remedy would have been requiſite in the caſes of thirty or forty ſuch patients, on board even a very ſmall ſhip, and how far the allowance made to the ſurgeon for medicines, was adequate to this expence.

And we heartily concur with the author of this journal in this juſt concluſion, That if the bark was ſupplied

the ſcent of the Senegal water the ſtrongeſt and moſt offenſive. I could not, however, diſcover, by the help of a good microſcope, the leaſt appearance of any animalcules; nor did any chymical experiment diſcover uncommon contents or impurities in thoſe waters. All of them, after ſtanding for ſome time expoſed to the open air, became perfectly ſweet and good.

Hence I am inclined to think, that the putrefaction of water deſtroys the living animalcules, and ſpawn of fiſh, which it may contain when freſh; and if ſuch water be permitted to putrify, by being kept in cloſe, clean veſſels, very wholeſome water may afterwards be obtained in Guinea.---- And thus, ſuppoſing the Guinea-worm to

plied to the ſhips on the coaſt of Guinea, at the expence of the government, in the ſame manner as the elixir of vitriol, and James's powders, it would be the means of ſaving the lives of many ſeamen. Until this point be obtained, in this voyage, ſurgeons ſhould take a large quantity of the bark in lieu of leſs neceſſary medicines ſupplied them from apothecaries hall; an indulgence which Dr. Hoſſack, the phyſician of Greenwich hoſpital, and ſuperintendant of the ſurgeons medicine cheſts, is ſo obliging as to grant.

be generated from animalcula, or their ova, contained in the waters of the country, their production in the human body, may probably be prevented, by drinking thoſe waters only that have been rendered perfectly ſweet after undergoing a previous putrefaction.

The quickeſt method of freſhening ſuch water is, by paſſing it through a ſeries of veſſels, placed under each other, having very ſmall holes bored in their bottoms, ſo that it may fall in ſmall divided drops, like a gentle ſhower of rain, through each of them, into a receiver fixed below. The wind, or air, having thus a free paſſage through the water, divided into ſmall drops, will ſoon render it wholeſome and ſweet *.

But to return from this digreſſion: Fluxes and fevers, as I ſaid before, are the diſtempers moſt fatal to Europeans on this coaſt; and the ſeaſon of their appearance is during

* This method of freſhening putrid water, was firſt diſcovered by the ingenious Mr. Otſbridge, a Lieutenant in the navy, but not before publiſhed.

the rains, and for ſome ſhort time after they have ceaſed.

As far as I have been able to learn, there is a pretty exact uniformity in the appearances and nature of the fevers and fluxes which afflict ſtrangers in Guinea; with this difference only, that their malignity or violence, together with the mortality proceeding from them in the rainy ſeaſon, are in proportion to the ſituation of the place, and its free ventilation by a wholeſome air.

The natives themſelves are not exempted from thoſe diſeaſes. They are in general ſhort-lived, and perceive as various degrees of purity and inſalubrity of the air in different ſpots of their country, as are felt in Europe, or in any other part of the world. Generally black prieſts, natives of that country, are hired by the Portugueze to undertake the converſion of thoſe of their own colour who reſide in unhealthy places: hence the miſſions at Rio Nunes and at Gigaſhore have been rendered both honourable and lucrative to ſuch black miſſionaries as chooſe to undertake them.

 We

We ſhall conclude our account of Guinea, with ſome extracts from the journal of the ſurgeon of a ſhip, which ſailed up the rivers of that country.

" Upon the 20th of February, we ſailed " from Liſbon, and on the 16th of March " arrived at the iſland of St. Jago. Here " we found the ſhips of different nations, " whoſe crews, as alſo the white people on " the iſland, were perfectly healthy. The " latter, however, ſeemed to have been " ſickly, and many of them were afflicted " with ague-cakes, a hard ſwelling on the " ſeat of the ſpleen.

" Upon the 5th of April, we arrived at " Gambia, and found all the Engliſh in that " fort in perfect health. The ſurgeon of the " factory informed me, that a relaxation of " the ſtomach, and conſequently a weakened " digeſtion, ſeemed to bring on moſt of " the diſeaſes ſo fatal to Europeans in the " ſickly ſeaſon. They were generally of a " bilious nature, attended with a low fever, " ſometimes of a malignant, at other times " of a remittent kind. Fluxes were alſo

" then

" then prevalent, and often proved mortal
" to ſtrangers. The flux ſometimes ap-
" peared alone, at other times attended the
" fever, but more frequently followed it.

" Upon the 12th of April, after ſailing 30
" miles up the river St. Domingo, we came
" to Catchou, a town belonging to the
" Portugueſe, in latitude 12 degrees north.
" In this town there were only four white
" men, the governor and three friars. The
" number of white people in the trading
" ſhips were 51. One morning, towards
" the latter end of April, a little rain fell.
" On the 13th of May there was a ſecond
" ſhower, accompanied with a tornado.
" On the 18th of May it rained the whole
" day; and the rain continued, with but
" ſhort intervals, until the beginning of
" October.

" In the month of June, almoſt two-
" thirds of the white people were taken ill.
" Their ſickneſs could not well be charac-
" terized by any denomination commonly
" applied to fevers: it however approached
" neareſt to what is called a nervous fever,

" as the pulſe was always low, and the brain " and nerves ſeemed principally affected. " It had alſo a tendency to frequent remiſ- " ſions *. It began ſometimes with a vo- " miting, but oftener with a delirium. Its " attack was commonly in the night, and " the patients being then delirious, were " apt to run into the open air. I obſerved " them frequently recover their ſenſes for " a ſhort time, by means of the heavy rain, " which at that time fell upon their naked " bodies. But the delirium ſoon returned: " they afterwards became comatoſe; their " pulſe ſunk, and a train of nervous ſymp- " toms followed; their ſkin often became " yellow; bilious vomitings and ſtools were " frequent ſymptoms.

" The fever reduced the patient's ſtrength " ſo much, that it was generally ſix weeks " or two months before he was able to walk " abroad. A conſuming flux, a jaundice, " a dropſy, or obſtructions in the bowels,

* " Vomits, bliſters, camphire, and the bark, were " the only things which merited the title of remedies " for this diſeaſe.

" were

"were the conſequences of it. Of 51 "white men, being the companies of four "ſhips which were at Catchou, one-third "died of the fever, and one-third more of "the flux, and other diſeaſes conſequent "upon it; and of theſe not one was taken "ill till after the rains began.

"I believe, on the whole face of the "earth, there is ſcarce to be found a more "unhealthy country than this, during the "rainy ſeaſon; and the idea I then conceiv-"ed of our white people, was by making "a compariſon of their breathing ſuch a "noxious air, with a number of river-fiſh "put into ſtagnating water, where, as the "water corrupts, the fiſh grow leſs lively, "they droop, they pine away, and many "die.

"Thus, ſome perſons became dull, inac-"tive, or ſlightly delirious at intervals, and "without being ſo much as confined to "their beds, they expired in that delirious "or comatoſe ſtate, in leſs than 48 hours "after being in apparent good health. The "white people in general became yellow;

" their ſtomach could not receive much food, " without loathing and reachings. And " indeed it is no wonder that this ſickneſs " proved ſo fatal, and that recoveries from " it were ſo tedious, and that they were at- " tended with fluxes, dropſies, the jaun- " dice, ague-cakes, and other dangerous " chronical diſtempers.

" It ſeemed more wonderful to me, that " any white people do ever recover, while " they continue to breathe ſo peſtiferous an " air as that at Catchou, during the rainy " ſeaſon.

" We were, as I have already obſerved, " 30 miles diſtant from the ſea, in a coun- " try altogether uncultivated, overflowed " with water, ſurrounded with thick, im- " penetrable woods, and over-run with " ſlime. The air was vitiated, noiſome, " and thick, inſomuch that the lighted " torches or candles burnt dim, and ſeem- " ed ready to be extinguiſhed; even the " human voice loſt its natural tone. The " ſmell of the ground and of the houſes " was raw and offenſive; but the vapour

" ariſing

" arifing from the putrid water in the " ditches was much worfe. All this how- " ever feemed tolerable, in refpect of the " infinite numbers of infects fwarming " every where, both on the ground and in " the air, which as they feemed to be pro- " duced and cherifhed by the putrefaction " of the atmofphere, fo they contributed " greatly to increafe its impurity.

" The wild bees from the woods, toge- " ther with millions of ants, over-ran and " deftroyed the furniture of the houfes: at " the fame time, fwarms of cock-roaches " often darkened the air, and extinguifhed " even the candles in their flight; but the " greateft plague was the mufquetoes and " fand-flies, whofe inceffant buzz, and pain- " ful ftings, were more infupportable than " any fymptoms of the fever.

" Befides all thefe, an incredible number " of frogs on the banks of the river, made " fuch a conftant and difagreeable croaking, " that nothing but being accuftomed to fuch " an hideous noife could permit the enjoy- " ment of natural fleep.

" In

" In the beginning of October, as the " rains abated, the weather became very " hot; the woods were covered with " abundance of dead frogs and other ver- " min, left by the recess of the river; all " the mangroves and shrubs were likewise " overspread with stinking slime.

" Upon our return to Lisbon, I observed " the blacks to suffer much from the change " of climate; for when they came into a " cold latitude in the month of December, " many of them were seized with the flux, " and other distempers, of which several " died."

I observed before, that the most frequent and fatal diseases in the sickly season in Guinea are not of an inflammatory nature.— And indeed so much harm has been done there by the lancet, in the hands of such as have read only Sydenham's works, or authors who treat of inflammatory fevers only, that it is most adviseable for the inexperienced in such climates to abstain altogether from its use, and to trust the safety of their patients in such cases to vomits, and the early

early application of bliſters, together with the uſe of Tartarum Emeticum, in ſmall doſes, or of other antimonial medicines of gentle operation, during the fever, and the bark upon its firſt remiſſion; which will be found the moſt ſucceſsful and judicious method of treating thoſe fevers.

In dangerous caſes, the bark ought to be adminiſtered in wine, to the quantity of an ounce and an half in 10 or 12 hours, and an ounce every 24 hours afterwards. If rejected by the mouth, it may be given in clyſters in double that quantity. Here it is proper to obſerve, that this remedy may be adminiſtered in large quantities with the utmoſt ſafety. I have often, in England, given an ounce of it in leſs than ſix hours, even when the ſtomach was weak, and the patient low, without obſerving the leaſt inconvenience, complaint of ſickneſs, or reachings; and I have had patients, who in leſs than three weeks have taken 14 ounces of the bark in ſubſtance; and there was even an abſolute neceſſity for their taking that quantity.

It should be considered, that Dr. Sydenham's judicious practice was local; it was confined not only to England, but to a particular and very healthy spot of it, London: and it is probable, that if the Doctor had practised at the distance of only a few miles from the metropolis, in the low grounds of Sheerness, and that neighbourhood, he would not have found the operation of bleeding so universal a remedy for most fevers.

Had this eminent physician been acquainted with the usual autumnal fever of several countries of Europe, and with the great mortality produced by its rage in hot climates, he would not have ventured to pronounce a continual fever, of about 12 or 14 days duration, the most constant and primary fever of nature, to which the medical precepts of the ancient physicians were chiefly applicable. In this fever, after bleeding and a vomit, the safety of the patient was to be intrusted in a great measure to Nature, as the principal agent of the cure, by means of the fever itself, which was always thought the salutary instrument of a

recovery; a practice and a theory by no means applicable to the fevers which attack Europeans in Guinea.

The main intention of this treatiſe is to guard all ſuch as go abroad againſt the malignant diſeaſes of foreign climates; where the indiſpoſed do too frequently ſuffer from an unſkilful treatment in their ſickneſs.

We are ſorry to ſay that this too often happens under the management of ſome who may be really ignorant, or of others ſo totally devoted to a particular local ſyſtem of practice, as never to allow themſelves either to act or to think contrary to its eſtabliſhed rules. In this work we ſhall therefore endeavour to ſuggeſt ſome medical hints, for the information of theſe phyſicians and ſurgeons who have had no opportunity of acquiring experience in the treatment of the diſeaſes of warm climates.—For further particulars we refer them to Part III. Chap. I.

We take this opportunity likewiſe to inform them, that the directions here given relative

relative to medical practice, not only on the coast of Africa, but in several other parts of the world, have been sent out of England by different gentlemen, and copies of them have been dispersed in several of our factories abroad; where they have been experienced and approved as the most successful methods of treating fevers, not only in our men of war, but in many of our settlements, especially in Africa. Several copies of them are there to be seen, transcribed from what were given to surgeon Oates and others, above three years ago; and I have frequently had the satisfaction of being informed, that they are now become the standard rules of a regular and successful practice in those parts of the world.

In Guinea, the loss of a small quantity of blood, in the beginning of a fever, does often neither good nor hurt; and there are diseases incident to Europeans in that part of the world, especially in the dry season, which may require even a repetition of that operation.

But

But during the wet or ſickly ſeaſon, in the caſe of Europeans afflicted with the fever, common there, it is ſeldom neceſſary to take away blood; and large and repeated bleedings are attended with fatal conſequences. Nothing can be a plainer proof of the diſpoſition of the air in this country, to produce remitting and intermitting fevers, than the common obſervation, that thoſe who have had obſtinate agues in England or Holland, almoſt conſtantly ſuffer a relapſe when they come on this coaſt.

SECT. III.

Of the Canaries. Cape de Verd Iſlands. The Iſlands of St. Thomas, Princeſs, Ferdinando Po, St. Helena. Cape of Good Hope. Madagaſcar. Maſcarenhas. Mauritius. Eaſtern Shores of Africa.

BEFORE we take our leave of the coaſt of Africa, we ſhall obſerve, as to the African iſlands,—That the Canaries are bleſſed with a temperate, pure and whole-

wholesome air. No sooner were the English officers landed there, when brought sick from Senegal, than they found an immediate and satisfactory alteration in their health.

There they no longer felt the scorching heat of a meridian sun, tempered with no refreshing breezes, and no cool air; from which impenetrable surrounding woods had before debarred them. They were no longer sensible of the sudden and piercing chillness of the evenings, nor tortured with swarms of blood-sucking gnats and flies. It was indeed surprising in how short a time they recovered their health, strength and colour, in those delightful islands.

Passing from the Canaries to the Cape de Verds, we find St. Antonio and St. Nicholas, the only two islands in that cluster, where strangers are exempted from a general sickness during the rains. This sickness is still more violent in the island of St. Thomas, Princess island, and Ferdinando Po.

It is in the island of St. Helena, to the southward of all these, that the English

 planters

planters retain their health, complexion, and a vigorous conſtitution, during all the ſeaſons of the year, and live to as great an age as in Europe.

After paſſing the fruitful, pleaſant and healthy Dutch ſettlements at the Cape of Good Hope, we come to the large iſland of Madagaſcar. Here the companies of many European ſhips have been reſtored to health, when afflicted with the ſcurvy, eſpecially if they arrived in the dry ſeaſon; for during the rains this iſland is very unhealthy, particularly the Bay of St. Auguſtine and Fort Dauphin, the two places where European ſhips commonly anchor. The Terpſichore, an Engliſh man of war, was a melancholy example of this, as, from being there during the rainy ſeaſon, ſhe loſt a number of her men and officers.

The ſame may be ſaid of the Maſcerenhas, Mauritius, and the barren iſland of Diego Reys. The French fort at Bourbon is not however ſo unhealthy at this ſeaſon as the Bay of St. Auguſtine in Madagaſcar.

As to the eaſtern ſhores of Africa, we ſhall only remark, that Mozambique is reckoned unhealthy; and that the country of Quiola proved ſo fatal to the Portugueſe, that they were obliged to abandon all their ſettlements upon it: whereas the great city and country of Melinda is ſaid to be tolerably healthy.

CHAP. III.

Diſeaſes in the Eaſt Indies.

SECT. I.

Periodical ſickneſs in the Engliſh factories in Arabia and Perſia, &c.

IN proceeding on our courſe to Arabia, Perſia, and India, and taking a view, as we paſs along, of the principal Engliſh factories eſtabliſhed in thoſe countries, we find, that at Mocha in Arabia, at Baſſora on the gulph of that name, and at Gambroon in Perſia, the European factors are annually ſubject to a periodial ſickneſs for a few months of the year.

Having now got into that part of the globe commonly called the Eaſt Indies, or

more properly the ſouthern parts of Aſia, upon a general ſurvey of the ſtate of things there, we find—That the countries which are well improved by human induſtry and culture, ſuch as China *, and ſeveral other places in that part of the world, are bleſſed with a temperate and pure air, ſalutary to the European conſtitution. On the other hand, the woody and uncultivated parts of India, viz. the iſlands of Java and Sumatra, the iſlands of Negrais, where the Engliſh lately attempted to make a ſettlement, Banda, one of the Dutch ſpice iſlands, and ſeveral others, have proved fatal to a multitude of Europeans and others, who have been accuſtomed to breathe a purer air.

* The numerous European factors who frequent China ſuffer no inconvenience from that climate, further than that, in the month of November, the men in thoſe ſhips which lie near to Wampoa, in the river of Canton, are ſubject to agues, occaſioned by the north-weſt winds, which paſſing over ſome ſwampy rice grounds, commonly blow at that ſeaſon. This diſeaſe ſeldom proves fatal, but is apt to haraſs the patient for the two ſucceeding months, if he continues on that ſpot. The Engliſh, whoſe conſtitutions have ſuffered by reſiding in the more unhealthy parts of India, find great benefit by being removed to Canton.

But

But in all ſpots of the Eaſt Indies ſituated near the muddy and impure banks of rivers, or the foul ſhores of the ſea, the vapours exhaling from the putrid ſtagnated water, either freſh or ſalt, from large ſwamps, from corrupted vegetables, and other impurities, produce mortal diſeaſes, eſpecially during the rainy ſeaſon.

There is a place near Indrapour in Sumatra, where no European can venture to remain, or ſleep one night on ſhore during the rainy ſeaſon, without running the hazard of his life, or at leaſt of a dangerous fit of ſickneſs; and at Podang, a Dutch ſettlement on Sumatra, the air has been found ſo bad, that it is commonly called the Plague Coaſt. Here a thick peſtilential vapour or fog ariſes after the rains, from the marſhes, which deſtroys all the white inhabitants.

SECT. II.

The four English Presidentships in India. Their comparative degrees of health. Diseases.

THE English have in this part of the world four presidentships or governments, to which all their other factories are subordinate, and upon which they depend, Madrass, Bengal, Bombay, and Bencoolen. Of these the climate of Bencoolen has proved the most sickly and fatal, not only to the English, but to all who have been accustomed to live in a pure air.

In the year 1763, upon the cession of Manilla to the Spaniards, by the last treaty of peace, many Chinese merchants, with their families, quitted that place, in order to settle under the English government at Bencoolen: but the air of this country proved so fatal, that most of those Chinese and their families died soon after their arrival. Many English have also fallen a sacrifice to the intemperature of this climate; and indeed very few of them survived, until they

they built a fort on a dry elevated ſituation, at the diſtance of about three miles from the town. It is called Fort Marlborough; where, during the rage of ſickneſs at Bencoolen, the garriſon is ſometimes very healthy.

Next to Bencoolen, of all the Engliſh factories, the climate of Bengal proves the moſt fatal to Europeans. The rainy ſeaſon commences at Bengal in June, and continues till October: the remainder of the year is healthy and pleaſant. During the rains, this rich and fertile country is almoſt quite covered by the Ganges, and converted as it were into a large pool of water. In the month of October, when the ſtagnated water begins to be exhaled by the heat of the ſun, the air is greatly polluted by the vapours from the ſlime and mud left by the Ganges, and by the corruption of dead fiſh and other animals. Diſeaſes rage among the Europeans in the months of July, Auguſt, September, and October, attacking chiefly ſuch as are lately arrived. Here, as in all other places, ſickneſs is more frequent and fatal in ſome years than others. The

distempers are fevers of the remitting or intermitting kind; for though sometimes they may continue several days without any perceptible remission, yet they have in general a great tendency to it, and are commonly accompanied with violent fits of rigors or shiverings, and with discharges of bile upwards and downwards. If the season be very sickly, some are seized with a malignant fever, of which they soon die. The body is covered with blotches of a livid colour, and the corpse in a few hours turns quite black and corrupted. At this time fluxes prevail, which may be called bilious or putrid, the better to distinguish them from others which are accompanied with an inflammation of the bowels. In all those diseases at Bengal, the lancet is cautiously to be used.

It is a common observation, both at Bengal and Bencoolen, that the moon or tides have a remarkable influence on intermitting fevers; and I have been informed by a gentleman of undoubted veracity, and of great knowledge in medicine, that at Bengal he could foretel the precise time when the

patient

patient would expire, it being generally about the hour of low water.

Thus much is certain, that in the year 1762, after a great ſickneſs, of which it was computed 30,000 blacks, and 800 Europeans died, in the province of Bengal, upon an eclipſe of the moon, the Engliſh merchants and others, who had left off taking the bark, ſuffered a relapſe. The attack of this fever was ſo general on the day of the eclipſe, that there was not the leaſt reaſon to doubt of the moon's influence *. Theſe obſervations furniſh an uſeful hint, which is to

* In this ſickneſs, a conſtant vomiting of a tough white pellucid phlegm, accompanied with a continual diarrhœa, was deemed the moſt mortal ſymptom. Bleeding was attended with fatal conſequences; but the adminiſtration of the bark, upon the leaſt remiſſion of the fever, with its continuance for ſome time afterwards, was recommended to every captain and ſurgeon of the ſhips in the river of Bengal.

All naval and other ſea-ſurgeons, whoſe ſhips are bound to the Eaſt Indies, ſhould take with them ten times the uſual quantity of bark, and upon this account be excuſed from taking other drugs not wanted in that climate, as bark is procured there with great expence and difficulty.

take

take doses of bark at the full and change of the moon, as being the seasons most dangerous for an attack or relapse into those intermitting fevers *.

But,

* As no accurate account has hitherto been published of the appearance of this fever in India, I will give some ingenious observations made on it at Bengal, Ann. 1762, by my friend Dr. Lind, which will also serve to prove the great similitude of this fever with those of other hot climates. " Impetus morbi plerumque subi-" taneus est, et incipit sensu debilitatis, ac ingenti " spirituum prostratione; accedunt frigiditas modo " major, modo minor, vertigo, nausea, capitis et lum-" borum acerrimi dolores, manuumque tremores; " vultus est pallidus, cutis vulgo arida et constricta, " oculi languidi ac graves, celer, at exilis pulsus, " anhelitus plerumque difficilis et singultibus inter-" ceptus.

" Progrediente paroxysmo, algores caloribus vagis " intermiscentur; hicce calor brevi factus violentus " permanet, augetur nausea, et in quibusdam vomitus " supervenit, unde magna copia bilis rejicitur; nec " raro per alvum bilis quoque dejiciebatur; rubescit " cutis, tumidi oculi et interdum haud parum inflam-" mati sunt: pulsus evadit plenior, et anhelitus diffi-" cilior, cum magna inquietudine, et siti importuna; " attamen, propter nauseam, potiones æger fastidit " omnes; lingua fit sordida; ac dolores capitis et lum-" borum ingravescunt; delirium supervenit; lenis in " facie apparet mador, qui sensim deorsum diffusus, " decrescente symptomatum violentia, remissionem in-

" stare

But, to quit Bengal, let us proceed to obſerve,—That though the air in the Engliſh preſidentſhip of Bombay is not ſo pure as

“ ſtare demonſtrat, eaque profuſis ſudoribus per-
“ ficitur.

“ Remittente febre, pulſus fere ad naturalem condi-
“ tionem redit; manent tamen capitis atque lumborum
“ dolores, licet leviores, ut et ſapor oris ingratus, ac
“ proſtratus appetitus.

“ Ingraveſcente morbo, remiſſionem vix notabilem
“ mox ſequebatur alius paroxyſmus, qui ſane haud ita
“ magno tremore incepit; majore tamen capitis dolore,
“ ſumma ſolicitudine, cardialgia, nauſea, vomitu, biliſ-
“ que dejectionibus; vomitus et dejectiones tamen
“ plerumque albi coloris erant calcis aqua commiſtæ,
“ vel lactis illius quod lactentes evomunt, adinſtar,
“ quando materia coagulata plurimum contrita eſt.
“ Fervor, immodica ſitis, ac deliria eveniunt. Lingua
“ evadit ſqualidior, ac, una cum dentibus et interiore
“ labiorum parte, nigra cruſta obtegitur; ſpiritus calet
“ fœtetque; inchoatur de novo remiſſio cum ſudore;
“ ea tamen ſpatio temporis eſt brevior, nec æque ac
“ prior conſpicua.

“ Alteram hancce remiſſionem ſequitur paroxyſmus,
“ in quo ſymptomata prioribus longe erant violentiora;
“ vomitus ac dejectiones magis fœtebant; lingua,
“ dentes, ac labiorum interiora non modo atra intege-
“ bantur cruſta, verum lingua adeo arebat rigebatque,
“ ut voces parum diſtincte efferrentur; deliria gravia,
“ inquietudo,

as at Madraſs, yet it is much more whole-ſome than at Bengal; the coaſt of Malabar being

" inquietudo, et moleſtia, durante pyrexia, maxime " fiebant; nec prius tollebantur, quam ſupervenerint " remiſſio ac ſudores.

" Si febris ita invaluerit in tertio paroxyſmo, ut mors " ſequatur, quod ſæpius obtigit, nonnulli ægri coma-" toſi evaſerunt; in aliis delirium eſt vehementius. " Excreta fœtida, ac haud ſecus quam cadaver olent; " exonerationes ſunt involuntariæ; pulſus celer, exi-" guus, et irregularis, adeo ut vix dinumerare aut ſentire " queas; gelidus toto manat corpore ſudor, præcipue " circa caput et collum; facies fit Hyppocratica, et " convulſa; ægroti ſtragula carpunt, et floccos legunt; " ſubit tendinum ſubſultus; in tergo ſolum recumbunt, " ſenſim ad imam lecti partem dilabuntur; extremi-" tates evadunt frigidæ ac lividæ; dein corripiuntur " convulſionibus, quæ tragœdiam claudunt.

" Vis ſolis ac lunæ ad Bengalam mirabiliter ad rece-" divam hunc morbum perpeſſos proclives efficit; unde " hanc inter cauſas excitantes morbi annumerare poſſu-" mus; eſt enim ita inſignis, ut ægrotus, qui octo aut " decem diebus convaluit, in ſummum recidivæ adductus " fuerit periculum, antequam lucidum cœli decus ple-" num orbem impleat, aut ſub interlunium, ni cortex " Peruvianus inhibendi cauſa detur. Documenta tam " multa ſunt ac res ipſa ita cunctis Bengalæ degenti-" bus innoteſcit, ut modo dixiſſe ſufficiat. Quoſdam " ipſe vidi, qui nonniſi ſub ipſo plenilunio et interlunio " paroxyſmum, et tum unicum tantum, habuere; " qui tamen facili negotio arceri potuit, ſi cortex Peru-" vianus

being pretty healthy, though inferior in this respect to the coast of Coromandel.

" vianus paucos dies ante expectatum accessionis " tempus exhibitus, ac usque quo illud sit elapsum " continuatus fuerit, in hujuscemodi casu febricitanti " cuidam puero mauro ipse sanantes porrigebam " manus, morbum usque ad quatuor paroxysmos quo- " vis plenilunio et interlunio tuto redeuntes permisi, " ut prius rem ipsam exploratam haberem, quam " corticem coërcentem admoverem.

" Nov. 16. Cal. Ann. 1762. Tempore pomeridiano, " solem haud parum lumine defectum vidimus; ac " cum antea sub serena cœli facie, ex nimis æstu la- " borabamus, mox inter maximam obscurationem aër " multum algebat. Tunc temporis remittens febris, " qua tenebatur D. Macquire à præfecto in concilio " tertius, subeunte solis defectu, exacerbata est; eodem " vero transeunte, evanuit. Ægroti vero qui tum " nostra sub cura erant non admodum afficiebantur.

" Subitos ac violentos lunæ effectus tum præcipue " observavimus quatuor, nonas Novembris, hora circiter " secunda matutina, quo tempore terra interposita ra- " dios intercepit solares; in eo temporis articulo haud " pauciores octo nautarum ex nave Drake, qui ad " Calcuttam in ædibus præfecti navis ex febribus con- " valescebant, eodem fere temporis puncto, vehe- " mentissimo paroxysmo sunt correpti; et idem plurimis " evenit qui in nave fuere collegæ nostri curæ deman- " dati." *Diss. Inaug. Med. De Febre Putrida in Bengalia Ann.* 1762. *Aut.* JAC. LIND.

The iſland of Bombay has of late been rendered much more healthy than it was formerly, by a wall which is now built, to prevent the incroachment of the ſea, where it formed a ſalt-marſh, and by an order that none of the natives ſhould manure their cocoa-nut trees with putrid fiſh. The rains begin here ſometimes in May, but more frequently in June, and for four months are very violent.

At Surat and Tellicherry, on the ſame coaſt, Europeans generally enjoy a good ſtate of health.

Madraſs is eſteemed the moſt healthy government belonging to the Engliſh: and indeed the air of the whole coaſt of Coromandel is in general pure and temperate, in reſpect of many other parts of India, not only at Madraſs, but at St. Davids, Cudalore, and at Negapatnam the Dutch preſidentſhip on this coaſt. The rains do not begin here until October, and continue during the months of November and December. The more violent the rains are, the ſhorter is their duration. The quantity of rain,

however, which falls at Madrass, is considerably less than what falls either in the kingdom of Bengal or coast of Malabar.

SECT. III.

The settlements of other European nations in India. Medical directions. Mr. Ives's curious observations made in a journey from India to Europe by land.

MANILA, in the island of Luconia, on account of the purity and healthy temperature of its air, may justly be reckoned the Montpelier of all the settlements established by other European nations in that quarter of the globe.

The Danish settlement at Tranquebar is extremely healthy, as evidently appears from the florid countenance of the Danes in that place.

Pondicherry, the capital of the French in India, is far from being unhealthful. The

same

same may be said of Goa, the residence of the Portuguese viceroy in that part of the world: whereas Batavia, the capital of the Dutch dominions, is annually subject to a fatal and consuming sickness.

Upon this occasion we cannot help remarking, that a daily and familiar observation of the fatal errors and mistakes committed by the young, thoughtless and ignorant, does not much excite our wonder; but we are apt to be struck with astonishment, when we find that the founders of great towns, and the governors of extensive provinces, through ignorance or mistakes, have exposed populous and magnificent cities to an annual and pestilential destruction. This seems to be the case at Batavia; where the Dutch, in endeavouring to make this their capital in India, to resemble their cities in Europe, have adorned it with canals or ditches intersecting each other, and running through every part of it. Those canals, replete with water, may perhaps serve for some use, or rather for ornament; but notwithstanding the utmost care to keep them clean, in the hot and unwholesome

climate

climate of Java, during and after the rainy ſeaſon, they become extremely noxious to the inhabitants, but more particularly to ſtrangers. The unwholeſome air of that place alone has cut off more Europeans than have fallen by the ſword in all the bloody wars carried on by the Dutch in that part of the world. In June the rains begin at Batavia: July and the ſucceeding months are the moſt unhealthy.

It is remarkable, that excepting a very fatal ſcurvy which raged in our fleet at ſea in the laſt war, the Engliſh ſhips of war which then touched at Batavia, ſuffered more by the malignant and fatal diſeaſes of that climate, than they did in any other part of India. Soon after the capture of Manila, the Falmouth, a ſhip of 50 guns, went to Batavia, where ſhe remained from the latter end of July to the latter end of January; during which time ſhe buried 100 ſoldiers of the 79th regiment, and 75 of the ſhip's company; not one perſon in the ſhip having eſcaped a fit of ſickneſs, except her commander Captain Brereton.

The

The Panther, a ship of 60 guns, was there in the years 1762 and 1764, but both times most unhappily during the rainy season. In the former of those years she buried 70 of her men; and 92 of them were very ill when she left that place. In the year 1764, during a short stay there, 25 of her men died. The Medway, which was in company with her, lost also a great number of men. And it was particularly observed, that the sickness raged with the greatest violence when the rains abated, and the sun had evaporated the water in the ditches, so that the mud began to appear. The stench from the mud was then intolerable.

The fever at that time was of the remitting kind. Some were seized suddenly with a delirium, and died in the first fit; but none survived the attack of a third. The surgeon of the Panther imputes his preservation to the taking as much of the bark every hour, in claret wine, as his stomach would bear, beginning the use of this remedy immediately upon the first remission of

of the fever. We may form ſome idea of the Dutch practice in this part of the world, when we find that, by the advice of four of their phyſicians, the bark was adminiſtered to Captain Matheſon of the Panther, notwithſtanding a remiſſion of his fever could not be procured: ſuch was their opinion and confidence in that medicine. But this gentleman, with many of his men, fell a ſacrifice to the intemperature of that climate. Nor was the ſickneſs at that time confined to the ſhips: the whole city afforded a ſcene of diſeaſe and death; ſtreets crowded with funerals, bells tolling from morning to night, and horſes jaded with dragging the dead in herſes to their graves.

At that time a ſlight cut of the ſkin, the leaſt ſcratch of a nail, or the moſt inconſiderable wound, turned quickly into a putrid ſpreading ulcer, which in twenty-four hours conſumed the fleſh even to the bone. This fact is ſo extraordinary, that upon a ſingle teſtimony credit would hardly be given to it; yet on board the Medway and Panther they had the moſt fatal experience of it, and ſuffered much from it.

Besides these malignant and remitting fevers, which rage during the wet season, and some time after it, in the unhealthy parts of the East Indies, Europeans, especially such as live intemperately, are also subject to fluxes, and to an inflammation or disease of the liver; which last is almost peculiar to India, and particularly to the Coromandel coast.

Fluxes are seldom here accompanied with inflammatory symptoms, the discharges being chiefly of a putrid or bilious nature: they are removed by administering first a vomit, then rhubarb, and lastly ipecacoanha, in small doses. After the bile and other putrescent humours have been thus sufficiently evacuated, opiates, with a diet of rice, and such food as is antiseptic, must be prescribed.

The disease of the liver is generally preceded by a high fever, a difficulty of breathing, and a violent pain fixed in the right side upon the seat of the liver, to which the sick person often applies his hand, seeking for relief. On its first attack, the patient should

ſhould loſe blood, and the part ought to be bathed with a warm relaxing and diſcutient fomentation; or a bliſter may be applied to it. When, by bleeding, the fever is ſomewhat abated, a gentle purge or clyſter being previouſly adminiſtered, immediate recourſe muſt be had to Mercury, as a ſpecific for this diſeaſe. A gentle ſalivation of 15 or 20 days continuance, muſt be raiſed by means of mercurial ointment rubbed upon or near the affected part, together with the uſe of mercurial pills or calomel taken occaſionally.

The livers of thoſe who died of this diſeaſe were found in a putrid ſtate, reſembling an honey-comb. I gave mercurials with good effect to a number of patients under my care, who came from the Eaſt Indies, and who ſuffered from a return of this diſeaſe when in England. In three caſes, where mercury was not adminiſtered, the liver came to a ſuppuration, of which two of the patients died. The uſe of Mercury in ſuch caſes may appear empirical; but by the experience of all who have practiſed phyſic in India, it has been approved as a

most safe and excellent method of cure. Sailors, who do not eat green vegetables, are apt to be likewise afflicted in India with the scurvy, accompanied with large and spreading ulcers, as also with scorbutic fluxes: for the cure of which, see my Treatise on the Scurvy *.

In

* I have been favoured with the following observations by Mr. Bogue, an ingenious surgeon at Titchfield.

"The diseases most fatal at Calcutta, while I was "there, in 1757, began with the rainy season, and were "obstinate putrid intermitting fevers. The cold fit, "which was excessively violent, continued often for "twelve hours; and as the fever returned every day, "the patients had not above four or five hours respite "from it. During the rains, and for some time after, "we had sick, at the same time, in this place, one "half of the men of the squadron under the command "of the admirals Watson and Pocock. Out of three "ships of the line, and a 20 gun ship, and those not "fully manned, we lost in six months upwards of "200 men, most of whom died of these fevers.

"Camphire was found the best medicine in the fit. "Bark and other antiseptics were administered in large "quantities, after first giving an emetic, and emptying "the bowels. This fever reduced the patients in "general to such a weak state, that Mr. Ives, then "surgeon of that hospital, judged it absolutely neces-
"sary

In India the European women in general enjoy a much better ſtate of health than the

" ſary to give arrack in their boiled rice to thoſe who " were on the recovery, or who had not the diſorder " in a violent degree. He likewiſe generouſly ſupplied " them with Madeira wine.

" In the inflammatory fevers preceding the rainy " ſeaſon, bleeding with caution was found of ſervice; " but as ſoon as the rainy ſeaſon ſet in, the lancet was " ſeldom or never uſed.

" A ſalivation generally cured the diſeaſe of the " liver, if the ſpitting was brought on before matter " was formed. In ſome the mercury produced a " looſeneſs, which alſo cured the patient. In inflam- " mations of the liver, when it adhered to the perito- " nœum, which was generally the caſe, and a tumor " appeared externally, it was ſeveral times opened " with ſucceſs.—Of which the following is an in- " ſtance.

" A ſeaman, aged about thirty-five years, was ſent " very ill of the ſcurvy, in the end of May 1759, " to his Majeſty's hoſpital, under my care, in the ab- " ſence of the ſurgeon at Negapatnam, a Dutch ſettle- " ment on the Coromandel coaſt. Soon after his " coming on ſhore, he was ſeized with a ſcorbutic " flux, and a few days afterwards complained of a " pain in his right ſide. In theſe circumſtances, as " the flux continued, and ſeveral livid ſcorbutic ſpots " had appeared on his limbs, with a contraction of

the men. Child-bearing is, however, peculiarly fatal to them at Calcutta; on which

" both knees, I judged it improper to give mercurials; so that a large tumor shewed itself on that side, pointing externally, with matter beginning to form. I forwarded the suppuration with poultices; and on the 13th of July, in the cool of the evening, being about a month after his first complaining of the pain of that side, I laid the tumor open about six inches, and let out near three pints of well digested matter. I then introduced my hand into the left lobe of the liver, which I found almost entirely suppurated, and containing several honeycomb cavities, the edge of the liver adhering to the peritonæum. He was dispirited on the thoughts of its being opened, but bore the operation better than could be expected in that low state, to which he was reduced.

" I cautiously filled the cavity with dry soft lint, and gave him a julep, with the tincture of bark, to take frequently. Next morning after the operation, there was a large discharge of good matter, and I found one sinus leading obliquely down towards the navel, and another towards the back, each about two inches in length. I laid them both open to the bottom; and these were the only openings I had occasion to make, though I found another sinus leading towards the chest. That day I dressed him as before, and the next day, after having fomented, I threw into the cavity an injection of barley-water, and tincture of myrrh, which I repeated three or four times, until I thought the parts were sufficiently

" cleansed

which account it would be advisable for them to retire to a more healthy situation at the approach of their delivery.

We

" cleansed of matter. I continued to dress with lint " preferably to any other application, on account of " its giving no uneasiness, and of its absorbing qua- " lity. I gave him the bark in substance, as soon as " his stomach would bear it.

" During the first fortnight I dressed him twice a " day, there being then a great discharge. The cavity " afterwards filling up fast, and the quantity of mat- " ter lessening, he was dressed only once in 24 hours, " but still continued to take the bark. In three weeks " the wound was not more than an inch deep, and " but two inches in length, florid granulations daily " forming; and towards the end of August, the parts " being almost cicatrized, the patient was sent on " board his ship to do duty, the admiral expecting " every day to meet the French squadron. He was " killed on the 10th of September following, in the " action between the English squadron commanded " by admiral Pocock, and the French by count " D'Ache.

" In some of those whose liver came to a suppura- " tion, I have known instances where the matter has " been so acrid, as not only to corrode, but to dissolve " the cartilages at the extremities of the false ribs, and " likewise part of those ribs.

" The

We ſhall conclude this curſory account of the diſeaſes in the Eaſt Indies, and of the compa-

"The following obſervations were made on the "bodies of two perſons who died of this diſeaſe, after "the liver had ſuppurated. In a man aged 60, I laid "open about ſeven inches in length of a very large "tumor of the right lobe of the liver pointing ex-"ternally, and let out at leaſt two quarts of fœtid "matter. I treated it much in the ſame manner as "the preceding caſe, and for the ſpace of one month "not without great hopes of a cure, though the in-"carnation was always more ſlow than in the other "patient. He was ſeized with a flux, which conti-"nued more or leſs until his death, which happened "in five months after the opening of this tumor.

"During the laſt four months the appearances fre-"quently varied; ſometimes they flattered us, but not "to ſo great a degree as before he was ſeized with the "flux. The aliment was diſcharged undigeſted "through the ulcer a little before he died; and on "opening the dead body, I found the right lobe of "the liver almoſt entirely conſumed, the remains "adhering in part to the ſtomach, in which there "was an opening equal to a half-crown piece, and "through it the food had paſſed to the liver. The left "lobe was a little enlarged, and all the bowels of the "abdomen were in an inflamed ſtate. In the patient "of another ſurgeon, upon opening the thorax, the "lower part of the right lobe of the lungs was found "ſlightly

comparative degrees of health enjoyed by Europeans in different parts of it, with a few extracts from Mr. Ives's accurate observations, made on his travels from India to Europe by land: this gentleman having for three years been surgeon to his Majesty's naval hospital in the East Indies.

" slightly adhering to the diaphragm, and its blood " vessels full and enlarged; the upper part of that " lobe, together with the left lobe of the lungs and " the heart, were all in a sound state.

" Upon inspecting the abdomen, that part of the " right lobe of the liver which lies contiguous to the " ribs, was almost entirely suppurated through its " whole substance, as far as the diaphragm: where " it had not suppurated, the blood-vessels were most " of them ruptured. On introducing the hand between the peritonœum and liver, there issued from " two large abscesses three pints at least of a crude " sanious matter. The right lobe extended itself into " the cavity of the breast of that side, quite to the " third true rib. The gall-bladder was in a healthy " state, and full of bile; the ductus communis cholidochus was wholly free from obstructions; but the " omentum was partly mortified. The stomach was " sound, but much distended with wind, and the " vessels on the intestines in a state of plenitude. " The kidneys, spleen, mesentery and pancreas were " perfectly sound."

" After

" After leaving the unhealthy kingdom " of Bengal, we arrived, on the 9th of " March 1758, at Gambroon in Perſia.

" The climate here is very unhealthy. " Few Europeans eſcape being ſeized with " putrid intermitting fevers, which rage " from May to September, and are often " followed with obſtructions in the liver.

" Mr. Parker, ſurgeon to this factory, is " much eſteemed for his medical know- " ledge. He has been ſo ſucceſsful in prac- " tice, that the Engliſh, during his reſi- " dence among them for two years paſt, " have buried only one of their number. " His method of treating thoſe fevers is, " after the adminiſtration of an emetic, to " order two ſcruples of the bark, twelve " grains of the ſalt of wormwood, and " twelve grains of the powder of ſnake- " root, to be taken every hour. Seven or " eight doſes of this medicine effectually " prevented the return of the fit, and a re- " petition of them, within ſix or eight " days after, ſecured the patient againſt " any relapſe.

" Various

" Various authors who have treated of " Gambroon, do, as well as the present " English factory, impute its unhealthfulness during the summer months to the " noxious effluvia with which the air is " contaminated, from the great quantities " of blubber fish left by the sea upon the " shore, which very soon become highly " putrid and offensive.

" Upon the 30th of March we came to " the island of Karec, in the Persian gulph. " Mynheer Tullick, surgeon to this Dutch " factory, informed me, that in the rainy " seasons, intermitting fevers and fluxes " are the usual distempers.

" After sailing up the river Tigris from " Bassora, we arrived at Bagdat. In this " city, supposed to contain 500,000 souls, " a purple fever then raged; but though it " was computed that an eighth part of the " inhabitants were ill, yet the distemper " was far from being mortal. Here we " were informed, that the Arabs had broken " down the banks of the river near Bas-

" sora,

" fora, with a design to cover with water
" the desarts in its neighbourhood. This,
" it seems, is the usual method of revenge
" taken by the Arabs, for any injury done
" them by the Turks in Bassora; and was
" represented to us as an act of the most
" shocking barbarity, since a general con-
" suming sickness would undoubtedly be
" the consequence. This was the case
" fifteen years before, when the Arabs, by
" demolishing the banks of this river, laid
" the environs of Bassora under water. The
" stagnating and putrifying water in the
" adjacent country, and the great quantity
" of dead and corrupted fish at that time
" lying upon the shore, polluted the whole
" atmosphere, and produced a putrid and
" most mortal fever. Of this fever be-
" tween 12 and 14,000 of the inhabitants
" died, and at the same time not above two
" or three of the Europeans who were set-
" tled there escaped with life: So dreadful
" are the effects of corrupt stagnating wa-
" ters, in such sultry climates! A Bashaw
" was lately dispatched to Bassora, to use
" his utmost endeavours to prevent this
" calamity,

" calamity, by repairing the banks, and by " preserving the course of the river within " its proper channel.

" Towards the end of May we found " the heat at Bagdat excessive, and almost " intolerable to our European constitutions. " We were advised by our friends to re- " main there until the month of October. " They represented to us the increasing " heat of the weather, and the violence of " it in the desarts of Arabia, but particu- " larly the danger of meeting with those " pestiferous and mortal blasts called Sa- " miels, in passing the desart.

" This is a sudden gust of wind, to " which travellers are exposed in the de- " sarts, sometimes towards the middle or " the end of June, but more frequently in " the months of July and August, when it " brings instantaneous death to every man " or beast that happens to stand with his " face towards it. Providentially however, " a certain though short warning of its ap- " proach is given, by a sensible alteration " of the air. When this is perceived, all

" travellers, together with their horses, ca-
" mels, &c. must lie prostrate upon the
" ground, with their faces downwards, and
" their feet towards the Samiel, and con-
" tinue in that posture until it is passed,
" which is the only means of safety. This
" pestiferous vapour quickly passes, and
" commonly does not expand itself far,
" but runs as it were in streams of no great
" breadth; so that travellers, at a few miles
" distance from each other, are exposed to
" different Samiels, and some of them may
" be so fortunate as to escape them. The
" Samiels may be in some measure shunned,
" by travelling only in the night during
" those months.

" To avoid the great desart, when we
" left Bagdat, we took the road to Mosul,
" and on the 5th of July arrived at that
" city. Here I learned from a Carmalite
" friar, who acted as physician to the Ba-
" shaw, that the common diseases in this
" place were ardent fevers and dysenteries
" in the summer, and intermitting fevers
" during the wet season. I understood from
" him, that the bilious obstructions and
" swellings

" ſwellings of the liver were as frequent
" here as in India. This place had lately
" contained 300,000 inhabitants; but a
" famine, and the ſickneſs which followed
" it, had greatly reduced the number.

" In our journey we paſſed through Ni-
" zibin, a place remarkable for its bad air,
" and bad water; which the ſame famine
" and ſickneſs had almoſt depopulated.

" After undergoing many difficulties, we
" at length, on the 5th of Auguſt, arrived
" at Aleppo*. As we performed this long
" journey in the warmeſt months of the
" year, I ſhall now relate what effect the
" intolerable heats had upon our conſtitu-
" tions.

" They produced an entire loſs of appe-
" tite, a faintneſs and gripes, with frequent
" and bilious ſtools; which greatly exhauſt-
" ed our ſtrength. My ſtomach was often
" ſo weak, that it could receive only a little

* For the diſeaſes frequent in this place, ſee Dr. Ruſſel's treatiſe on that ſubject.

" milk. Several of us became feverish, " through the excessive heat, and were ob- " liged to have recourse to gentle vomits, " sometimes with good effect, to Dr. James's " powders, to take off the fever, and small " doses of calomel and rhubarb, to cleanse " our bowels from a sharp and acrid bile. " Though we were furnished with the most " ample conveniencies for travelling, which " money, or the strongest recommendations " to the principal Christians, as well as Ma- " hometan chiefs, could procure, and had " laid in a quantity of excellent Madeira, " claret, and other provisions, &c. &c. yet " most of us suffered in our constitutions, " by this long and fatiguing journey.

" Such as travel this way in the sultry " season, should set out early in the morn- " ing, or rather travel only in the night, " and always, if possible, in a covered lit- " ter, called a Tackaravan.

" The travellers must seek for repose " during the heat of the day, in a hut, or " house, if it can be had, well sheltered " with a close thick roof;—or they must

" endea-

" endeavour, if possible, to sleep near the
" banks of a river; and in that case a single
" tent, not painted, will afford an abode
" the most commodious, next to that of a
" house, if the canvas be kept constantly
" wet by the servants, from trenches full
" of water cut round it.

" We found lemonade, made with the
" extract or juice of lemons, the most grate-
" ful and cooling drink, during the sultry
" heats of the day; but a glass of strong
" wine was absolutely requisite in the even-
" ing, to repair our exhausted strength and
" spirits. The stomach must never be op-
" pressed with full meals.

" The traveller must not forget to pro-
" vide himself with some alum, as the
" water of the Euphrates and the Tigris,
" though wholesome, is apt to be muddy.
" We added a quarter of an ounce of pow-
" dered alum to six or seven gallons of wa-
" ter, and in about an hour and an half
" afterwards the water became quite pure
" and transparent. We found no inconve-
" nience from the alum; and I am inclined

"to think alum is not only an excellent "purifier of thick muddy water, but that "in hot climates it cools the body, and "braces up its relaxed fibres *."

* It is a common practice among some apothecaries to put a small quantity of alum in their distilled simple waters, when foul; which quickly renders them clear and transparent. Though this addition of alum makes the water somewhat hard, yet the small quantity requisite for the purpose does not seem to make common water harder than the Bristol water, so much esteemed in Jamaica and other hot countries, great part of the alum being precipitated with the fæces of the water.

CHAP. IV.

Diseases in the West Indies.

SECT. I.

Comparative degrees of health in the English settlements. Of the French, the Dutch, the Spanish settlements. Diseases. The yellow fever. Whence its most mortal symptoms. A disease similar to it in Cadiz: The most violent symptoms of this fever, and of the flux, mitigated by a change of air. The English, French and Dutch accounts of the Diseases in the West Indies. The dreadful mortality occasioned by them among the English at the Bastimentos, Carthagena, and the Havannah.

WE shall conclude this part of our subject with some observations on the West Indies, and an account of the diseases most common and fatal to Europeans,

on their firſt arrival in that quarter of the globe.

The moſt healthy of all the Engliſh poſſeſſions in that part of the world is the iſland of Bermudas. Next to which is the iſland of Barbadoes, if we except that ſpot of ground upon which Bridge-town, its capital, is ſituated. The air in many parts of St. Chriſtophers is alſo pure. That of Antigua is bad: and the climate of Jamaica is reckoned ſtill more unhealthy; though much leſs ſo than it formerly was. The colour of the European inhabitants in the iſland of Montſerrat, is a proof of the ſalubrity of its air: the ſame may be ſaid of Nevis. In general, the rainy ſeaſon in thoſe iſlands happens in Auguſt, September, October, and November.

We are ſorry to obſerve, that in the ſituations pitched upon for the principal Engliſh ſettlements now made on Granada and the Granadines, but particularly at Tobago, the health of the inhabitants has been a point little attended to. In the iſland of St. Vincent, the town of Kingſton is rendered

very

very unhealthy by an adjoining morass: but it is to be hoped, that these new settlements will become more healthy, when the stagnating water is drained off; an effect which the heat of the sun itself would in some places produce, if the woods were cut down. With respect to the settlements of other European nations, we shall here only observe, that the climate of Cayenne has proved very sickly to the French; and the air of St. Domingo is much more unhealthy than that of Martinico. At Guadaloupe, Martinico, and in most of the other French West Indian islands, there are low, swampy grounds, commonly called Basse Terre, which are parcelled out to such poor and indigent foreigners as will run the risk of their health and lives in improving them.

The Dutch settlements at Surinam, St. Eustatia, and Curaçoa, are all very unhealthy.

The air in different parts of the Spanish West Indian dominions varies greatly in point of purity, according to the situation of places. Thus the city of Mexico is very

healthy, while La Vera Cruz, its sea-port, is remarkable for bad air.

It is observed, that the periodical rains, and the sickness which attends them, are much more violent in the hot, marshy, woody or uncultivated places, upon the continent of the West Indies, than upon the adjacent islands, though the inland provinces are in general more healthy than the sea-coast.

Were we to take a survey of the whole coast of the Spanish continent in the bay of Mexico, we should find few sea-port towns or rivers during the rainy season tolerably healthy *.

Shoals of large and ravenous sharks crowding into the harbours, a dark thick cloud to the southward, with thunder and lightning, slowly approaching, foretel the coming on of the sickly season, and are the awful preludes of those impetuous torrents

* We shall have occasion afterwards to mention many large and extensive provinces in the West Indies, which are blessed with a pure and wholesome air.

which

which in a few days burst from the clouds, and cover with water the whole face of the country. These rains, by their continuance, do so swell the numerous rivers, that the waters of the sea are thereby rendered fresh for several miles, and muddy almost to the distance of ten leagues from the shore.

Some of the harbours in that bay, and those generally the most secure, prove fatal to Europeans from another cause. Thus in Port Maho, near to the island of Rattuan, ships lie in a bason of water so environed with very high mountains, that the wind can have no access to them; and in this respect they suffer more than even at English harbour in Antigua. The stagnated air thence becomes so unwholesome, and so putrid, that the men, after being there a few days, are suddenly seized with violent vomitings, headachs, deliriums, &c. and in two or three days more the whole body putrefies, and the dissolved mass of blood issues from every pore.

In

In ſuch places the water of the ſea itſelf would probably become putrid, and in a ſhort time deſtructive to the very fiſh, was it not kept in motion by a gentle flux and reflux, which may be perceived every day. This circumſtance ſeems to depend on the winds out at ſea.

The bay of Honduras, and the Moſquitto ſhore, may be called healthy, when compared with Carpenters River and Rio Morte, or River of Death. This laſt was ſo named by the Spaniards, from the death of all thoſe of that nation who at different times have attempted to make a ſettlement upon it.

In all thoſe places, as in other unhealthy climates, fevers and fluxes are fatal to Europeans; but that diſeaſe denominated the yellow fever is more particularly deſtructive to them.

I have already had occaſion to mention that fever*; but having conſidered this

* See Eſſay on preſerving ſeamen, p. 50th, and Dr. Naſmyth's ſentiments in the note ſubjoined to it.

matter

matter with more attention, I am now of opinion,—That the remarkable diſſolution of the blood, together with the tendency to putrefaction in the whole body, the black vomit, and the other ſymptoms which characterize the yellow fever *, are often accidental though fatal appearances in fevers of the Weſt Indies.

They proceed in ſuch as are newly arrived, ſometimes from a groſs habit of body, exceſſive drinking of ſpirituous liquors, and from being afterwards overheated in the ſun; but the intenſe heat and unhealthfulneſs of the air does much more frequently produce all theſe ſymptoms. This fever was once ſuppoſed to have been firſt carried into the Weſt Indies by a ſhip from Siam: an opinion truly chimerical; as ſimilar diſeaſes have made their appearance, not only in the Eaſt Indies, but in ſome of the ſouthern parts of Europe, during a ſeaſon when the air was intenſely hot and unwholeſome.

* See ſeveral particulars relative to this fever, and the method of treating it, in Part III. Chap. I.

This happened in the months of September and October 1764, when excessive heat, and want of rain for some months, gave rise to violent epidemic bilious disorders, (resembling those of the West Indies) in the city of Cadiz in Spain, of which an hundred persons often died in a day. At this time the winds blew mostly from the south, and after sun-set there fell an unusual and very heavy dew.

This disease began commonly with alternate slight chills and heats, nausea, pains of the head, of the back, of the loins, and at the pit of the stomach. These symptoms were often followed, in less than 24 hours, with violent reachings, and vomiting of a green or yellow bile, the smell of which was very offensive. Some threw up an humour black as ink, and died soon after, in violent convulsions, and in a cold sweat. The pulse was sometimes sunk, sometimes quick, but often varying. After the first day, the surface of the body was generally either cold, or dry and parched. The head-ach and stupor often ended in a furious delirium, which proved quickly fatal.

The

The dead bodies having been examined, by order of the court of Madrid, the ſtomach, meſentery and inteſtines were found covered with gangrenous ſpots. The orifice of the ſtomach appeared to have been greatly affected, the ſpots upon it being ulcerated. The liver and lungs were both of a putrid colour and texture.

The ſtomach contained a quantity of an atrabilious liquor, which, when poured on the ground, produced a ſenſible efferveſcence; but when mixed with ſpirit of vitriol, a violent ebullition enſued. The dead bodies turned ſo quickly putrid, that at the end of ſix hours their ſtench was intolerable, and in ſome of them worms were already found lodged in the ſtomach.

His Majeſty's ſhip the Tweed being at that time in Cadiz bay, ſeveral of her men were taken ill when on ſhore; but by being carried on board, all of them recovered. Neither did the black vomit, or any other deadly ſymptom of that fever, make its appearance in any of the ſhips. The dread of this diſtemper forced many people

people of faſhion to retire into the country; where they remained in perfect ſafety from it.

The black vomit, the violent hæmorrhages, and the other mortal ſymptoms of what is called the yellow fever of the Weſt Indies, ought to be conſidered as adventitious, in like manner as purple ſpots and bloody urine in the ſmall-pox, or as an hiccup in the dyſentery. This laſt ſymptom, in warm climates, is particularly dangerous.

The following obſervations by Dr. Wind, will ſerve to illuſtrate what I have advanced.

"The Middleburgh, a Dutch ſhip of war, "ſailed from the Texel in Holland, on the "25th of December 1750, and on the 12th "of March 1751, entered the harbour of "Curaçoa, with a healthy ſhip's company; "one only having died during their paſ-"ſage from Europe. The air at Curaçoa "was foggy and moiſt, and the weather "exceſſively hot; ſo that in the beginning

"of

"of April two very bad diseases distressed "the crew; a putrid dysentery attended "with great pain, stench and hiccup, and "also a violent fever, accompanied with "the black vomit.

"They sailed on a cruize the 17th of "April. The weather at sea was then "moist and rainy: the diseases still conti- "nued, but not in so violent a degree as "in the harbour. Those who laboured "under the dysentery, were not at sea at- "tacked with the hiccup, and its other bad "symptoms; neither did the black vomit "seize those who had the fever, as when "in the harbour.

"None of those taken ill at sea died of "either of these distempers: but when the "ship returned into the harbour, in the "latter end of April, the former danger- "ous symptoms returned; the hiccup at- "tended the dysentery, the black vomit ac- "companied the fever, and the number of "the sick was greatly increased, among "whom several died."

I am

I am very sensible, that perhaps one or two persons in the island of Jamaica may be seized with the yellow fever; nay, that the black vomit may attack a man* when newly arrived there, without any previous complaint, and when no other person in the neighbourhood labours under it.—But from thence we can only infer, that a person may be suddenly seized with the worst symptoms of a malignant fever, during a very healthy season.

This happens daily in all parts of the world. Nothing is more common, than a person's being attacked with an obstinate ague, or flux, in the most healthy seasons and countries: and patients are often afflicted with a petechial fever, which does not proceed from contagion.

But such sporadic diseases are not the present object of our attention, as we treat only of epidemic and general sickness, from causes universally prevailing.

* Women are not so subject to the yellow fever as men, and in general enjoy a much better state of health there than men do, owing probably to their more temperate way of living.

I have perused many English accounts, both in manuscript and print, of this West Indian yellow fever, in most of which the authors agreed only in the common epithet of yellow, from the skin's being frequently tinged with that colour. But the same appearance is also usual in almost all intermitting fevers, in some contagious fevers, and in many others, and so cannot properly be a distinguishing mark of this.

Physicians of other countries, such as the French and Dutch, give various names to the West Indian fevers; neither do they agree in assigning the same names even to the same distempers.

Two French Physicians, who both practised in the island of St. Domingo, have lately published an account of the diseases prevalent in that island *. The first, Dr. Chevalier, informs us, That almost all Europeans who come to St. Domingo, not only

* Traité des fievres de l'isle de St. Domingue, par Poissonniere Desperieres, M. D. Lettres sur les Maladies de St. Domingue, par Chevalier, M. D. &c.

from Europe, but from North America, are ſoon after their arrival attacked with a malignant fever, formerly called Maladie de Siam, which differs from the autumnal fever uſual in France only in being a more violent and a more dangerous ſickneſs. A later phyſician, Dr. Poiſſonniere, who practiſed three years in that iſland, ſays,— The moſt frequent and fatal fevers which attack Europeans newly arrived at St. Domingo, are either the true Cauſus, or ardent fever in a violent degree; or another diſtemper, which is ſtill the Cauſus, or ardent fever, in a leſs dangerous form.

Both theſe French authors agree, that the air of this iſland is extremely healthy to the natives, and to ſuch Europeans as have been ſeaſoned to the climate.

But they do not ſeem to have had proper opportunities of obſerving the worſt ſymptoms which attend the diſtempers ſo peculiarly fatal to Europeans, on their arrival in the Weſt Indies.

Dr. Rouppe, a Dutch phyſician, has, in my opinion, furniſhed us with the beſt de-

ſcription of theſe diſeaſes, when raging with their utmoſt violence in a Dutch ſhip of war, at the iſland of Curaçoa, and aſſigned the moſt proper epithets for them, viz. Colliquative, putrid, and ſpotted fevers, the cholera and dyſentery; or, as we may otherways tranſlate them, Malignant fevers, violent bilious diſorders, or the black vomit, and the bloody flux. I have therefore, in a note, given his own words, as no account can be more full, clear and maſterly.

There is a large field for medical obſervations, during a very ſickly ſeaſon in the Weſt Indies, when thouſands of Europeans are ſent thither at once, in caſe of a war in that part of the world. We then find the face and appearance of diſeaſes the ſame as they are moſt accurately deſcribed by that learned and able phyſician *.

The

* Anno 1760, Primo die Auguſti, ad inſulam S. Euſtachii appulimus. . . . Die undecimo ejuſdem menſis, ad inſulam Curaçoa direximus iter. . . . . Die decimo nono, portum Curaçoa intravimus, et tunc viginti ægrotaverunt; inter quos nonnulli capitis doloribus ſine febre, nonnulli vero colicablioſa laboraverunt,

The memorable destruction of admiral Hosier's squadron, at the Bastimentos, was begun

verunt, sed levi cura in pristinam sanitatem restitui poterant.

Rouppe de Morb. Navigant. pag. 68, 69.

In initio commorationis, (apud insulam Curaçoa) uti supra diximus, morbi, qui maxime occurrebant, fuerunt capitis dolores, colicæ biliosæ, sanationem facile admittentes; hæ vero mutabantur in cholericas affectiones, primis longe graviores, periculosioresque, quibus mirum excruciabantur ægri. Inceperunt autem cum ingenti ardore circa præcordia, alvi torminibus, miro angore, et inquietudine, quæ subsequebantur biliosæ dejectiones, tam per superiora, quam per inferiora, cum ingenti virium prostratione; multi sudore perfundebantur frigido; hæc si perrexerint, imprimis si simul febris accesserit, quemadmodum in nonnullis contigit, cum pulsu magno, qui utplurimum per decem circiter horas permansit, intumescere tunc inceperunt labia, facies lurida evasit; remittente dein febre sanguinem fuscum sat copiose vomitu rejecerunt, et hi fere omnes obierunt, et quidem paucis horis post hujus symptomatis apparitionem: nonnulli eandem materiam, sed nigriorem, tetrumque spargentem odorem, alvo excernebant, sed malum sanationem admisit; simile quid in quibusdam contigit, qui febre afficiebantur, licet dejectiones non urserint. Alios assueto modo incessit biliosa febris, et quantum videre potui, hi maxime fuerunt Juvenes, vel mediæ ætatis, robusti, et ante morbum alacres; cum ardore nempe circa præcordia,

begun by the ſcurvy, and completed by the malignant Weſt Indian fever and flux. In

cordia, bilis vomitu, vel vomendi conatu, et ſiti fere inextinguibili; quidam horum in principio levibus frigoris, et caloris viciſſitudinibus afficiebantur; dein ſubſequebatur urens in toto corpore calor, cum pulſu magno, pleno, et celeri; lingua fuit ſubflava, albicans, ſæpius limbo viridi in margine cincta, madida ſemper manſit.

Pergente morbo, in nonnullis ſecundo, in aliis tertio die, ſponte minuebatur calor, et pulſus naturalis ex improviſo reddebatur, qui ſenſim ſenſimque minor evaſit, et tandem parvus, et tremulus; apparentibus in nonnullis petechiis, imprimis circa pectus, brachia, et internam femorum partem, in nonnullis magnas lividas vidi maculas; hæc autem fiebant cum tanta virium proſtratione, ut ægri minimo motu in animi deliquium caderent; ſudor præterea copioſiſſimus in toto corpore ſuboriebatur; ægri inſuper anxii, inquieti, leviter delirantes, admodum incurioſi, nihil æſtimantes, nihilque querentes, evaſerunt; attamen ad quæſita fere ſemper recte reſponderunt. In nonnullis, decidente pulſu, ſuboriebatur ingens circa præcordia ardor, labia leviter intumeſcebant, facies evaſit lurida, brevi poſt accedebat vomitus fuſcæ materiei, et tandem mors: alii ardore, et alvi torminibus divexabantur, atque tetrum ſubnigricantem ſanguinem alvo ejecerunt. In nonnullis ſecundo, in aliis tertio vel quarto die flaveſcere inceperunt oculorum album, et cutis, quod mali fuit ominis. Lingua inſuper de die in diem albidior, et tandem tremula evaſit, ſemper in dorſo jacuerunt ægri. Sic au-

In the year 1741, no sooner had the rainy season set in at Carthagena, where the English

. . . .

tem pergente morbo, nonnumquam secundo, vel tertio, sed utplurimum quarto die accedebat tranquilla mors. . . . . Sanguis, in calore febris vena emissus, læte rubebat, concrevit, serumque separavit, uti in Europa, subflavum; qui vero vi morbi restiterint, et quintum aut septimum diem attigerint, utplurimum furunculis vel pustulis parvis rubris dolentibus, admodum difficile in suppurationem abeuntibus, variolarum confluentium adinstar, fere in toto corpore tegebantur. . . . . . . Tandem maxima ægrotantium pars, imprimis, qui trigesimum prætergressi fuerunt annum, et quibus mali corporis habitus erat, dum morbo corripiebantur, conquesta est, de dolore, et ardore circa præcordia, cum vomendi conatu; sed pauci vomuerunt, pulsus in nonnullis per aliquot horas increvit, sed brevi iterum naturali similis factus est, et dein parvus: cutis calor naturalis fuit, lingua madida, et alba; copiosus sudor, primo jam morbi die, in toto corpore prorupit, nullæ tamen apparuerunt maculæ. Ii, quibus sudor parvus aut nullus erat, copiosis nigris, et fœtidissimis dejectionibus, cum alvi torminibus vexabantur, insuper lipothymiis quam frequentissime corripiebantur: si vero evacuationes hæ parum cessabant, aut notabiliter minuebantur, et sudor copiosior non evasit, tunc admodum angebantur ægri; hic autem, si copiosius prorupit, longe melius se habuerunt: tandem in omnibus pertinacissime, ab initio ad finem usque permanserunt vigiliæ. Juvenis 18 circiter annorum mane bene se habuit, verum circa decimam matutinam de capitis dolore et cæteris febricitantium symptomatibus conquestus,

lish troops lay encamped, than the same variety of diseases, then remarkably malignant, became also contagious, and destroyed the greatest part of that army; the poor remains of which were almost totally cut off in the sickly season upon the island of Cuba.

But as the Havannah is not quite so unhealthy as either Carthagena or Curaçoa, so in the late expedition to that part of the world, though the English troops suffered greatly during the siege of that place, in the sickly season, yet their diseases, though rendered very mortal, from want of good water, and from other circumstances, were in

conquestus, pulsum magnum, plenum; et celerem habuit. Secundo die ad vesperam sanguinem fuscum vomitu copiose ejecit. Tertio autem obiit. Alius, 16 annos natus, vesperi bene se habuit, mane alterius diei, in strato sensuum expers inveniebatur; corpus examinavi, quod subtumidulum, maculis lividis conspersum, pulsu fere in toto carens inveni; insuper prodibat ipsi sanguis ex aure sinistra, naribusque nigerrimus, gustu subdulcis, qui aliquot horas post mortem fluere perrexit; cadaver vero brevi in integrum livescebat, et tetrum halitum emisit.

Rouppe de Morb. Navigant. pag. 304, et seq.

general leſs violent and malignant than thoſe which raged at Carthagena.

The following is a letter I received from a gentleman on that expedition, dated 24th of October 1762.

"I think myſelf extremely happy in "being among the number of the living, "conſidering the deplorable condition we "are now in. You will hardly believe me, "when I tell you, that I have only 33 men "of my company now alive, out of 100 "which I landed. Our regiment has loſt "8 officers, and 500 men. They moſtly "died of fluxes and intermitting fevers, "the general diſeaſes here. The other re- "giments have loſt in proportion. We "are now very ſickly, as you may ima- "gine, when out of 17 battalions here, "we cannot muſter 600 men fit for duty. "The appearance of this country is moſt "beautiful, and its natural advantages are "many; yet a man's life in it is extremely "uncertain, as many are in health one "morning, and dead before the next."

This

This naturally leads me to enumerate the moſt certain ſigns or proofs of an unhealthy country.

SECT. II.

Signs of an unhealthy country. A digreſſion.

THE firſt proof of an unhealthy country which I ſhall mention, is a ſudden and great alteration in the air, from intolerable heat to a chilling cold. This is perceived as ſoon as the ſun is ſet, and for the moſt part is accompanied with a very heavy dew, and ſhows an unhealthy, ſwampy ſoil; the nature of which is ſuch, that no ſooner the ſun-beams are withdrawn, than the vapour emitted from it renders the air raw, damp and chilling, in the moſt ſultry climates; ſo that even under the equator, in ſome unhealthy places, the night air is very cold, to an European conſtitution.

The ſecond is, thick noiſome fogs, ariſing chiefly after ſun-ſet, from the vallies, and more particularly from the mud, ſlime, or other impurities. In hot countries, the ſcent of theſe fogs may be compared to that of a new cleaned ditch.——Diſeaſes therefore ariſing from theſe cauſes, do generally take place in the night, or before ſun-riſing.

The third is, numerous ſwarms of flies, gnats, and other inſects, which attend putrid air, and unhealthy places covered with wood.

The fourth is, when all butchers meat is ſoon corrupted, and in a few hours becomes tainted and full of maggots: when metals are quickly corroded, on being expoſed to the open air: and where a corpſe becomes intolerably offenſive, in leſs than ſix hours. Theſe are all proofs of a cloſe, hot, unwholeſome and unventilated ſpot. And in ſuch places, during exceſſive heats, and great calms, it is not altogether uncommon, eſpecially for ſuch Europeans as are of a groſs habit of body, to be ſeized at once with the

moſt

moſt alarming and fatal ſymptoms of what is called the yellow fever, without even a previous complaint of ſickneſs, or other ſymptoms of the diſeaſe. There has firſt been perceived an uneaſy itching ſenſation commonly in the legs, and upon pulling down the ſtockings, ſtreams of thin corrupted blood followed, a ghaſtly yellow colour quickly diffuſed itſelf over the whole body, and the patient has been carried off in leſs than 48 hours.

The fifth is, a ſort of ſandy ſoil, ſuch as that at Penſacola, Whydah, and the iſland of Bonaviſta, (commonly a ſmall, looſe, white ſand) which is found by experience to be injurious to health. The peſtiferous vapour ariſing during the ſummer months, and in the heat of the day, from ſuch ſandy deſarts, in South America, in Aſia, and in Africa, can only be characterized by its effects. This blaſt, which is called the Samiel wind, proves inſtantly fatal both to man and to beaſt, in the hot ſandy deſarts: but when it paſſes over a ſoil covered with graſs and vegetables, its effects are mitigated.

Thus

Thus the ſoutherly winds, while they blow from the deſarts of Lybia, during the ſummer, at Algiers, Tunis, and Tripoli, produce an unhealthy ſeaſon. This happens alſo at Madraſs, where the winds, in the months of April and May, paſſing over a large track of land, are always hot and diſagreeable.

Sudden guſts alſo of a hot and ſuffocating wind are then often obſerved to come from thoſe ſands, once or twice, or even more frequently a day. Theſe guſts paſs very quickly, and affect perſons who happen to be ſtanding with their faces towards them, in the ſame manner as the hot air which iſſues from a burning furnace, or from a heated oven, and obliges them immediately to turn from it, in order to recover breath. The effects of this hot ſuffocating blaſt or vapour on the human body, even when mitigated by paſſing through a moiſt atmoſphere, is the ſame as that of intenſe cold; it ſhuts up every pore of the ſkin, and entirely ſtops the perſpiration of ſuch as are expoſed to it.

Theſe guſts come only in the day-time, and always from the ſame quarter, that is, from the deſarts. Water is the only known antidote or corrector of this vapour: hence coarſe thick cloths, kept conſtantly wet, and hung up at the windows or doors, mitigate its violence, and leſſen its effects; and a houſe ſo built as to have no doors or windows fronting the deſarts, affords alſo an excellent protection to thoſe who live in it.

Theſe ſudden guſts are to be diſtinguiſhed from the hot land winds which conſtantly blow at Madraſs, and other places on the coaſt of Coromandel, at that ſeaſon, from midnight till noon. The ſea breezes then begin, which relieve the difficulty in breathing, and the obſtructed perſpiration occaſioned by the land winds.

That the heat of thoſe land winds, as alſo of the ſudden guſts which accompany them, proceed from large tracts of ſands being heated by the ſun, is evident, from the increaſed heat and ſuffocating quality

of

of thoſe winds, in proportion as the day advances, and as the heat of the ſeaſon is increaſed.

The oppoſite qualities of the winds blowing from each ſide of the Balagate mountains is a further proof of this. Theſe mountains running from north to ſouth, divide the hither peninſula of India into two unequal parts, and ſeparate what is called the Malabar from the Coromandel coaſt. To the former they are very near, but at a great diſtance from the latter. The winds blowing from theſe hills are on the Malabar coaſt always remarkably cool, but on the coaſt of Coromandel, in the months of April, May, June, and July, are extremely hot and ſuffocating, as they paſs over a large tract of intermediate ſand, heated during thoſe months by an almoſt vertical ſun. Hence the Malabar coaſt is always cloathed with an agreeable verdure; whereas the Coromandel coaſt, during the continuance of thoſe hot winds, ſeems a barren wilderneſs, nothing appearing green except the trees. On the contrary, the winds

winds that paſs over thoſe ſands after being wet with the rains, are the coldeſt which blow at Madraſs.

Bottles of liquor, incloſed in bags of coarſe cloth, kept conſtantly wet, and ſuſpended in the ſhade, where thoſe hot winds may have free acceſs to them, become as cold as if they had been immerſed in a ſolution of nitre. This phænomenon has occaſioned much ſpeculation, and has been accounted a ſurpriſing effect peculiar to theſe hot winds: but it is, in my opinion, owing to the conſtant evaporation of the water from the ſides of the bottle.

It is an obſervation of the natives on the coaſt of Coromandel, which is confirmed by the experience of many Europeans, that the longer the hot land winds blow, the healthier are the enſuing months; theſe winds, as they expreſs it, purifying the air. Are not theſe winds, therefore, the cauſe why the air on the coaſt of Coromandel, except during their continuance, is more healthy than in other parts of India, where theſe winds do not blow? Does not this alſo

alſo ſuggeſt a very probable reaſon why the plague in Egypt always ceaſes in the beginning of June? The periodical hot winds which come from the deſarts of Nubia and Ethiopia, having then rendered the air of Egypt pure and wholeſome. Many have aſcribed that effect to the north-winds, as the plague not only ceaſes when they blow, but all infected goods, houſehold furniture, and wearing apparel, are then ſaid to become entirely free from the contagion; theſe, however, cannot be the cauſe, as the moſt deſtructive plague is always abated in its violence, if not wholly eradicated, before they ſet in. With equal propriety we may reject the opinion that the overflowing of the Nile is productive of that ſalutary effect, as the plague generally ceaſes before the increaſe of that river is perceptible.

Thus the plague, the greateſt calamity which can afflict mankind, ſeems to be deſtroyed by thoſe hot winds, which are otherwiſe ſo pernicious to animal and vegetable life. And although, during the continuance of theſe winds, the moſt fruitful fields wear the aſpect of a parched deſart, yet no ſooner the

the rains fall, but vegetation is reftored, the plants revive, and a beautiful verdure is again fpread over the face of the refrefhed country. In Egypt, where it feldom rains, the fame effect is produced by the overflowing of the waters of the Nile.

SECT. III.

Concerning fuch employments as generally prove fatal to Europeans, in hot and unwholefome climates.

IT may not be improper, in this place, to point out fome fervices, which are of fuch a nature, as cannot well be performed in hot and unhealthy countries by Europeans, efpecially by fuch as are lately arrived, without imminent danger of their health and lives.

The firft is, that of cutting down woods, or clearing the ground from trees, fhrubs, &c. I might produce many inftances of

the fatality of this employment, but shall here mention only two.

At the conclusion of the late peace, the captain of a ship of war went on shore at the island of Dominica, with twelve of his men, to cut down the wood, and to clear a piece of ground, which he intended to have purchased; but in a few days, sickness obliged him to desist from this dangerous work; the captain and eleven of his men being seized with violent fevers, which terminated in obstinate intermittents, and of which several died. The survivors suffered so much in their constitutions, that even after they came to England, the return of an east wind was apt to bring on a violent fit of the ague and fever.

The Ludlow-Castle, a ship of war of 40 guns, in a late voyage to the coast of Guinea, lost 25 of her men at Sierra Leon, who were employed in cutting wood for the ship.

This is an occupation which has often proved destructive to Europeans in those

climates, and in which they ought never to be employed, efpecially in the rainy feafon; there being numberlefs inftances of white perfons, when cutting down the woods at that feafon, who have been taken ill in the morning, and dead before night. The extreme danger of this work at fuch a time, would even render it a proper punifhment for fuch convicts as were faved from the gallows for this purpofe.

If the purchafing of negroes on the coaft of Guinea can be juftified, it muft be from the abfolute neceffity of employing them in fuch fervices as this is. It does not feem confiftent with Britifh humanity to affign fuch employments to a regiment of gallant foldiers, or to a company of brave feamen.

The fending Europeans in open boats, after fun-fet, where the foil is fwampy, or where there are great night fogs, is another evil lefs known, and lefs fufpected, but no lefs dangerous.

The fingle duty alone of fetching frefh-killed butchers meat at night for the ufe of

 our

our ſhips companies in the Eaſt and Weſt Indies, has deſtroyed every year ſeveral thouſand ſeamen. In thoſe parts of the world, butchers meat muſt be brought on board at night, immediately after it is killed, otherwiſe it will not be fit for uſe the next day: but ſurely a contract for ſending it on board at that ſeaſon, might be made with the natives, for a trifling ſum of money; and it ought to be conſidered that this trifling ſum is advanced for the preſervation of many lives.

During the ſickly ſeaſon at Batavia, a boat belonging to the Medway, which attended on ſhore every night, was three times ſucceſſively manned, not one of her crews having ſurvived that ſervice. They were all taken ill in the night, when on ſhore, or when returning on board; ſo that the officers were at length obliged to employ none but the natives of the country on that buſineſs.

Great numbers of men have periſhed, from being employed in this manner at Bengal, where the European ſhips often anchor

anchor in the moft unhealthy parts of the river; and even when the great night fogs arife, after the rainy feafon, the men are often obliged to perform fuch night fervices in boats.

Now, fince it is fo dangerous for Europeans in unhealthy countries, particularly during a feafon of ficknefs, to be expofed in an open boat to the foggy night air, it muft appear that fending them unfheltered, in open boats, far up rivers, in unhealthy fouthern climates, for the fake of wood, water, trade, or other purpofes, muft be attended with the moft deftructive and fatal confequences.

The beft prefervative againft the mifchievous impreffions of a putrid fog, a fwampy, or of a marfhy exhalation, is a clofe, fheltered and covered place; fuch as the lower apartments in a fhip, or a houfe in which there are no doors or windows facing thefe fwamps. If, in fuch places, a fire be kept either in the chambers or at the doors, or other inlets into a houfe, (as is practifed in fome unhealthy countries, dur-

ing their rainy or noisome foggy season) or in the hatchways of a ship, these fires, together with the smoke, prove an excellent and effectual protection to those within against the injuries of a bad air. Of many examples which might be offered to prove this, I shall only give one.

When the Edgar, a ship of war of 60 guns, was upon the coast of Guinea, in the year 1765, her men were very sickly, and many of them died: whereas it was observed, that in a sloop of war, which was constantly in company with her, few were taken ill, and not one died during the whole voyage. This could be ascribed to no other cause, but that in the sloop the fire-place for cooking victuals was on the same level with the deck, upon which the men lay; and every morning, when the fire was lighted, especially when there was but little wind, the smoke from the cook-room spread itself all over the ship, and particularly over these parts where the men lay; but from the construction of the fire-place in the Edgar, no smoke from it ever came between her decks.

Perſons on board any ſhip whatever, are much more ſafe, and their ſituation is infinitely preferable to that of thoſe who make diſtant inland incurſions in ſmall boats upon the rivers, in unhealthy tropical countries, and who are for the moſt part totally ignorant of the ſources of the diſeaſes and deaths which ſurround them.

The intolerable ſcorching heats at noon often oblige ſuch perſons to go in a manner half naked, their clothing being almoſt inſupportable; while a free and plentiful perſpiration iſſues from every pore. In the day-time, the ſwampy ſhores emit a ſmell reſembling that of putrid fleſh, or corrupted carrion; and a near approach to ſuch putrid ſwamps is then apt to produce an immediate ſickneſs, a vomiting, and afterwards a low, nervous fever *.

But

* In ſuch circumſtances, a vomit taken immediately, and a change into a pure air, will often prevent a fit of ſickneſs.

A company of gentlemen belonging to his Majeſty's ſhip the Phœnix, taking the diverſion of hunting and ſhooting at the mouth of the river Gambia, by following

 ing

But if they happen to paſs them at night, or lie near them in an open boat, the air from thoſe ſwamps is perceived to be quite chill and cold; inſomuch that warm, thick clothing becomes abſolutely requiſite, to guard the body againſt the impreſſions of ſo great an alteration in the air, and of its cold and inclement quality. The ſmell of the ſwamps, and the vapour ariſing from them, at this time, reſembles the unwholeſome ſcent of a ditch lately cleaned. And the effect upon the moſt healthy and vigorous conſtitution, is often a chilling cold fit of an ague, terminating in a fever, with delirium, bilious vomitings, a flux, or even death itſelf.

I hope, what has been ſaid on this ſubject, will ſerve to excite ſome tender feelings

ing their game into a large ſwamp, were all of them affected by its putrid effluvia. They were immediately ſeized with a ſickneſs, vomiting, head-ach, and a conſtant hawking and ſpitting, from the diſagreeable ſmell, which (as they expreſſed it) ſeemed to remain in their mouth and throat. Upon their returning to the ſhip, each of them was ordered a vomit, which immediately removed all thoſe complaints.

of

of humanity in ſuch as have the direction of our trade and ſhips abroad; as nothing can be more inhuman than ſending unſeaſoned Europeans high up from the mouths of rivers, into an uncultivated country, eſpecially during the rainy ſeaſon, and where there is no ſhelter from the peſtiferous nocturnal air *. This practice is the more

* It may be here expected, that where ſuch duties are unavoidable, thoſe who undertake them ought to be furniſhed with ſome precepts for their preſervation.

I would adviſe all who are employed in cutting down woods, or in other laborious and dangerous ſervices in hot climates, during the heat of the day,—to have their head covered with a bladder dipt in vinegar,—and to waſh their mouths often with vinegar,—and in unwholeſome places never to ſwallow their ſpittle,—but rather to chew a little rhubarb, or ſome other bitter, and ſpit it out frequently,—to ſtop their noſtrils with a ſmall piece of linen or tow, dipped in camphorated vinegar,—and to infuſe ſome bark, garlic and rhubarb in brandy, of which a dram may be taken either by itſelf, or diluted with water, morning and evening.

In the evening, before ſun-ſet, they ſhould leave off work, and not return to their labour in the morning, till the ſun has diſperſed the unwholeſome dews and vapours

more inexcuſable, as the points gained by it may generally be accompliſhed by other means.

vapours of the fields. For their ſafety during the night, they ſhould retire to a cloſe hut, as the dews may penetrate a tent; here, in the abſence of the ſun, a conſtant fire ſhould be kept; but, if that be found impracticable, the apartment in which they lie ſhould be well fumigated with gun-powder, as fire and ſmoke will afford them the moſt excellent defence againſt the noxious and dangerous qualities of the night-air. The ſmoking of tobacco in their huts, the chewing of garlic, and not ſleeping on the ground, are circumſtances which will alſo contribute to their preſervation.

If, from a neglect of theſe precautions, the nocturnal chill fog has made an impreſſion upon the body, a vomit immediately ſhould be adminiſtered near a good fire, and the benefit of a plentiful ſweat after it, will often prevent fatal conſequences. But if any ſymptoms of a low fever ſtill continue, as a head-ach, a ſickneſs at the ſtomach, chills, &c. a bliſter ought immediately to be applied, as theſe complaints, though ſeemingly ſo ſlight as not to confine the patient to his bed, are flattering and deceitful, and often terminate in a fatal malignant fever. If this fever can be brought to intermit, let the bark be immediately taken, to the quantity of a quarter of an ounce, or more, in red wine, every two hours, and the patient quickly removed into a better air.

If it be done for the ſake of wood, water, or other neceſſaries of life, there are few places in the world where theſe cannot be brought into a fort, factory, a ſhip, by the natives, and ſuch others as are perfectly ſeaſoned to the country.

If it be done for the ſake of trade, might not this be effected with equal advantage, by having the trading boats or veſſels rowed or managed by the natives; who are generally much better acquainted with the navigation of the rivers in their own country than ſtrangers are?—And in this caſe, an honeſt native factor, or at leaſt one or two white people long ſeaſoned to the climate, will be ſufficient to ſuperintend the cargo.

Upon the whole, if all ſhips of war and others, bound to the Eaſt and Weſt Indies, were permitted, on their arrival in thoſe parts of the world, to enter upon their books, as part of their complement, from 10 to 20 blacks or natives, to be ſolely employed in all ſuch duties as have been mentioned, it would undoubtedly be a means of ſaving the lives of many Europeans.

peans. Such may be entered on board as are fishermen by profession, or who are dexterous in the management of small vessels and boats. Thus, for example, at Jamaica, the proprietors would willingly permit their slaves to serve on board the king's ships in the West Indies for any length of time, provided their wages were paid to their masters. And those negroes being deprived of the means of debauchery and riot, which our seamen are apt to fall into when on shore, the duties of wooding and watering the ship, and all the services required of boats at night, would, in all probability, be more speedily and faithfully executed.

Burying the dead in swampy countries, is another occupation which has proved fatal to many, and which ought also to be entrusted to negroes or the natives of the country. The effluvia from ground when newly opened, whether from graves or ditches, are far more dangerous than from the same swampy soil when the surface is undisturbed; nay, in some places, it has been found to be almost certain death for an European to dig a grave, unless long

ſeaſoned to the country. In ſuch a place, the attendance of friends at funerals ought to be diſpenſed with.

I am ſenſible that it is not uncommon to meet with gentlemen who have been long in the Eaſt and Weſt Indies, who treat all the apprehenſions of ſickneſs in thoſe climates as imaginary, and the precautions againſt them as needleſs and chimerical. It is probable they might never have been employed in ſuch ſervices as I have mentioned, and perhaps they have not reſided much during the ſickly ſeaſons in very unhealthy places, or at leaſt may have been ſo fortunate as to enjoy good health, which many have done, when well ſeaſoned to ſuch climates.

Theſe perſons I ſhall addreſs, in the words of Cicero to his friend at Baiæ. I muſt only obſerve, that this delicious winter retreat of the ancient Romans was remarkable then, but much more ſo at preſent, for its unwholeſome air during three months in the ſummer. "Gratulor Baiis noſtris: ſiquidem ut ſcribis, ſalubres repente factæ ſunt: " niſi

"nisi forte te amant, et tibi assentiuntur, et "tamdiu, dum tu ades, sint oblitæ sui. "Quod quidem si ita est, minime miror, "cœlum etiam et terras vim suam, si tibi "ita conveniat, dimittere."

It is not the intention of this treatise to disturb such favourable opinions as these, which it is proper should be entertained by all those whose station in life requires submissive obedience, without speculation.

A total ignorance of these important matters, or inattention to them, are, in commanders in chief, highly blameable, as well as extremely dangerous: the lives of thousands may be lost by it.

END OF PART I.

ADVICE TO EUROPEANS.

PART II.

CHAP. I.

Advice for the preſervation of Europeans who reſide near the ſea, in hot climates.

SECT. I.

Poſitions founded on the preceding narrative, intereſting to all who go abroad.

THE obſervations which we have made concerning the various climates in the four grand diviſions of the world, point out thoſe diſeaſes which are moſt

moſt fatal to Europeans in different countries abroad.

It now remains to deduce ſome uſeful concluſions from theſe obſervations.

The firſt is, that the diſeaſes of ſtrangers in different climates bear every where a great ſimilitude to each other; and that the violence or malignity of the fevers and fluxes, with which they are often afflicted, depend in a great meaſure upon the degrees of heat and moiſture, but more particularly upon the nature of the ſoil and of the winds.

The conſtitution of Europeans, by length of time, becomes ſeaſoned to the Eaſt and Weſt Indian climates, if it is not injured by the repeated attacks of ſickneſs upon their firſt arrival. Europeans therefore, when thus habituated, are generally ſubject to as few diſeaſes abroad as thoſe who reſide at home; inſomuch that many perſons, dreading what they may be again expoſed to ſuffer from a change of climate, chooſe rather to ſpend the remainder of their lives abroad,

abroad, than to return to their native country.

Secondly, It appears that there is ſcarcely any country which can be mentioned, that has not its healthy and pleaſant ſeaſons: theſe continue for the greateſt part of the year. At ſuch times it may with ſafety be viſited by ſtrangers.

Thirdly, The moſt unhealthy ſpots in the world have in their neighbourhood, and often at no great diſtance from them, places which afford a ſecure retreat and protection from diſeaſes and death, as has already appeared in part, but will be more fully proved in the ſequel.—In a word, the diſeaſes moſt fatal to ſtrangers in every country, ſeem not only to be confined to particular ſeaſons, but even during thoſe ſeaſons to certain places only.

Theſe poſitions are very intereſting to all who go abroad; and they lead us to the important object of this treatiſe, the preſerving annually a multitude of lives, as they point clearly out to us the eaſieſt and the moſt

effectual method for accomplishing that great purpose.

Strangers should always leave those unhealthy spots for a few months during the sickly season, until they become well inured to the climate. This removal to a small distance from the seat of sickness promises a security at least equally certain with the method now taken by Europeans, of shutting themselves up in their houses, and having no communication with the natives, during the rage of the plague in Turkey. It is likewise a precaution, upon which the absolute safety of strangers in unhealthy climates may alone depend.

One cannot, without astonishment, see the absurdity of mankind, in never thinking of this so simple and easy a method, which their own observations must have every day pointed out to them: yet our factories abroad have never paid any attention to it, and a proper method of doing it has never been recommended to them.

SECT. II.

A convenient and ſafe retreat from ſickneſs pointed out.

IT may, at firſt ſight, appear almoſt impracticable to find a convenient and ſafe retreat from the ſickneſs which rages at times in many foreign climates. Mankind are much more ready to ſtart difficulties on this ſubject, than deſirous to remedy the evil. Some will be ready to aſk, for inſtance, Where can that ſafe retreat be found, on the coaſt of Guinea, in the rainy ſeaſon, when the whole country is almoſt covered with water?

The proper anſwer to this queſtion is, That all places on that coaſt are not equally unhealthy. The Engliſh found the iſland of Goree much more healthy than their ſettlements either on the river Senegal or Gambia, and there fewer people died in proportion, than in the adjacent parts of Africa. But we ſhall ſee from the follow-

ing circumſtance, that retreats of ſafety may be even found upon that coaſt.

The Portugueſe, finding that almoſt all the European miſſionaries whom they ſent to propagate the Chriſtian faith in Guinea, died ſoon after their arrival, found it neceſſary to eſtabliſh a ſeminary of learning at St. Jago, for the inſtruction of black prieſts. But as the canon law of their church does not permit thoſe of the black colour to riſe to the dignity of a biſhop, perſons of this order were always ſent from Liſbon; and their lives at St. Jago were generally ſo ſhort, that whoever was appointed biſhop to the Cape de Verd iſlands, conſidered himſelf as ſacrificed to the climate. Some years ſince, a ſenſible prelate, dreading the fate of his predeceſſors, procured a diſpenſation of abſence from his cathedral, and was permitted to live in the iſland of St. Antonio. In conſequence of this diſpenſation, the European biſhops now live in this iſland, at a ſmall diſtance from their cathedral, to as great an age, and in as good health, as if they had continued at Liſbon.

It

It is beyond a doubt, that on many other places of that coaſt, there are dry, elevated, and well ventilated ſpots, which, by being thoroughly cleared of wood, might be rendered healthy to European conſtitutions. We ſhall only mention the high hills of Sierra Leon, upon whoſe ſummits the air is clear and ſerene, while thick miſts and noiſome vapours overſpread the lower grounds: yet even in this place the Engliſh inhabit a low valley, merely for the benefit of a ſpring of good water; the carriage of which, to any part of that hill, might be eaſily performed by ſlaves.

It is aſtoniſhing to obſerve, that while one third of the Europeans, in many of their factories, die annually, by the unhealthful climate, they permit their negroes to lie idle or aſleep the greateſt part of the day, when they might be uſefully employed in clearing the ground, draining the ſwamps, and either in burning or cutting down the woods and ſhrubs, or at leaſt in opening avenues through them for purifying the air.

The mortality of thoſe Europeans muſt not therefore be attributed ſo much to the malignity of the climate, as to their own ignorance and inattention. A foreigner who fixes his abode upon a ſickly ſpot in England, as for example at Hilſea * Barracks, in the iſland of Portſea, muſt not reckon the climate of Great Britain unhealthy, becauſe he ſuffers from the diſadvantages of ſo bad a ſituation.

In ſultry climates, the ſmalleſt errors of this kind are attended with much more fatal conſequences than in our northern latitudes. —The Engliſh caſtle at Whydaw has been rendered more unhealthy than the negroe town in its neighbourhood, by a ſmall circumſtance, unattended to at firſt. It is built on a ſpot of ground that the ſea-breezes cannot reach, without paſſing over a little inconſiderable brook of water, which pro-

* Barracks well known to moſt of the officers in the army, for the prevalence of obſtinate autumnal diſeaſes, which frequently rage at that place, and are confined to it alone.

duces ſome aquatic plants, always covered with a putrid ſlime.

During the preſent uncultivated ſtate of Guinea, it is not probable that the Europeans will form any conſiderable inland ſettlements. Their chief factories are ſituated near the ſea: thoſe therefore who reſide in them can ſcarcely have any where a better and more excellent retreat than on that healthy element, in the ſickly ſeaſon. In another work *, I have clearly ſhown, that the ſea air affords a certain aſylum in all hot and unhealthy countries.

It will occur to the reflection of all who have viſited ſuch places, that the ſea-breezes bring always health and a pleaſant ſenſation along with them.

It was obſerved, that during the ſummer and autumn 1765, when fevers raged at Portſmouth, and in ſuch ſhips as lay in

* Eſſay on preſerving ſeamen, p. 63 to 67, and Papers on Fevers, p. 34 & 35.

that harbour, near the mud, the men who were in the ſhips at Spithead enjoyed perfect health. I likewiſe remarked, that for three months, when this epidemical ſickneſs prevailed moſt, there was not one ſeaman or marine ſent to Haſlar hoſpital, who had been ſeized with it in any ſhip at Spithead.

When the violent and fatal ſickneſs raged at Cadiz, it did not extend its influence to any ſhip which lay at a diſtance from the city; as I am informed by Dr. Maguire, an eminent phyſician of that place. His Majeſty's ſhip the Tweed was then at anchor in Cadiz bay: an officer and ſeveral of her men, who had been on ſhore, were ſeized with this fever; but all thoſe who were ſent on board their ſhips recovered, no bad ſymptoms appearing in their fever; whilſt a diſeaſe, ſimilar to the black vomit and the yellow fever, and equally mortal, depopulated that great city.

I obſerved before, that admiral Broderick's ſquadron lay at anchor off the iſland of Sardinia, in perfect ſafety from thoſe fatal

fatal diſeaſes which ſeized almoſt all his men who ſlept on ſhore. And lately, when a mortal ſickneſs, in the year 1765, prevailed at Penſacola, by which a regiment newly arrived there loſt 120 men; and it is ſaid, that eleven out of twelve of the officers ladies, who were landed with them, alſo died; the companies of the men of war, lying at one mile's diſtance from the ſhore, enjoyed the moſt perfect health.

Theſe ſhips were the Tartar and Prince Edward, of whoſe men thoſe only who had been on ſhore were ſeized with this malignant fever, and all of them recovered when they got on board. It was likewiſe remarkable, that ſuch gentlemen as were ſeized with this fever at Penſacola, and carried on board ſhips, either quickly recovered; or at leaſt, by this change of air, the fever being diveſted of its moſt mortal ſymptoms, ſoon aſſumed the form of an intermittent.

From what has been ſaid, we are not to infer, that ſuch as live in ſhips are always exempted from the diſeaſes of the adjacent country;

country: the reverſe of this is often felt by our ſeamen, who ſometimes from accidents unavoidable, and often from an ignorance almoſt unpardonable, ſuffer more dangerous ſickneſs than even many who live on ſhore. Thus lying either near ſwampy grounds, or in cloſe unventilated harbours, is equally dangerous with being on the land itſelf.

I am informed by Mr. Martin, ſurgeon of the Cataneuch, a Guinea trader, that when he was in Gambia river, in company with four other ſhips, the men in one of thoſe ſhips were daily taken ill of fevers and fluxes, and ſeveral of them died delirious; while all the Engliſh in the other ſhips, and in the factories, were in perfect health: but upon removing that ſhip about half a league from her firſt anchorage, which was too near ſome ſwamps, her men became as healthy as thoſe in the other ſhips.

SECT. III.

Floating factories recommended.

THE just inference then from all that has been said, is, that if a ſhip, or floating factory was eſtabliſhed in a proper place, and at a due diſtance from the ſhore, at the mouths of the rivers Senegal and Gambia, at Cape Coaſt, and all other places where it may be found neceſſary and ſafe, it would be a means of preſerving every year a multitude of lives, eſpecially on the Guinea coaſt.

The idea of a floating factory is not new to thoſe who have been in Guinea: ſhips ſo called, have been ſecurely moored on different parts of that coaſt, for the advantage of trade. But they are here propoſed for the benefit of health, without which there is very little comfort even in the advantages of commerce.

Such as have only ſeen merchants ſhips or coaſting veſſels, and are unacquainted with

with the many conveniencies which may be made in a ſhip, for the accommodation and entertainment of people of the higheſt rank, and of the moſt exquiſite taſte in luxury, will think it ridiculous to adviſe governors and principal merchants to ſleep, or live for three or four months in the year, on board a ſhip.

But we muſt not confound our idea of people, pent up in a ſmall ſhip, or in a veſſel at ſea, undergoing all manner of hardſhips, ſuffering extreme hunger, inceſſant fatigue, and frequent diſappointments, with the ſituation of perſons living at eaſe, in a commodious ſhip, furniſhed with all ſorts of neceſſaries, by means of a daily intercourſe with the country.

The admirals of our fleets, and captains of our ſhips of war, find in few places abroad better entertainment, or more convenience, than in their own ſhips. In like manner, a floating factory may be fitted up, in any taſte whatever, either for convenience or pleaſure.

Mr.

Mr. Doidge, late ſecretary to admiral Watſon in the Eaſt Indies, upon his return home, being in an ill ſtate of health, having always found himſelf better when at ſea, or on the water, contrived a veſſel of a commodious form, to which he gave the name of the Ark, and in which he had reſolved to ſpend much of his time. This little floating houſe contained a wine and coal cellar, a kitchen, a dining-room, and a ſleeping room, elegantly furniſhed, and an apartment for his ſervants. In this floating manſion he propoſed to reſide during the heat of the ſummer, as a pleaſant and cool retreat, for the benefit of his own health, as well as for the entertainment of his friends.

Now if, in addition to the many conveniencies which a ſhip, properly fitted up, would afford to the gentlemen in any factory, we conſider health and preſervation as principal objects of their attention, the propriety of eſtabliſhing ſuch floating factories, where it may be found neceſſary and ſafe, can ſcarcely be queſtioned. There is good anchorage off the bars both of Senegal and Gambia,

Gambia, in the road of Sierra Leon, and in many other places of the coaſt, where ſhips with maſts ride ſafely at all ſeaſons of the year: in how much greater ſafety muſt a ſhip at anchor then be which has no maſts? Shipwrecks are uncommon on this coaſt, as the moſt violent ſtorms, the tornadoes, come always from the land, and are of ſhort duration.

Thoſe ſhips are propoſed as a ſafe retreat from ſickneſs during the rainy ſeaſon, and for a few weeks after it, until health be reſtored to the country. They will alſo afford a pleaſant retreat into a pure air, which will eſtabliſh health of body, and chearfulneſs of mind, at a time when thick fogs and rains render the houſes on ſhore diſagreeable, moiſt, and uncomfortable.

The ſickneſs which might attack at this ſeaſon any of the gentlemen on board the veſſel, would be ſlight: it would probably be no more than a gentle diarrhœa, or a bilious complaint, which could be eaſily removed. I am almoſt morally certain, that if, together with attending to thoſe directions

tions which I gave on a former occaſion, for preſerving a conſtant purity of air in ſhips *, they would keep a fire, eſpecially during the night, between them and the land effluvia, it would be extremely conducive to health. This might be eaſily done in a country where labour and fuel † are of ſmall value: beſides, the fire might be employed in diſtilling freſh from the ſea-water; ſo that, by this means, they might have the air purified, and at the ſame time be ſupplied with the moſt wholeſome drink.

The vulgar and erroneous opinion of the ſea air being the cauſe of ſcorbutic and of other violent diſorders, to which ſeamen in long voyages are ſubject, I have already confuted in my Treatiſe on the Scurvy, and alſo in my two Diſcourſes on Fevers and In-

* See Eſſay on preſerving ſeamen.

† In order to avoid inſects, let the wood or fuel brought from the ſhore remain always in a boat until it is uſed, as it commonly abounds with noxious vermin, and therefore ought never to be placed in any cloſe confined part of the ſhip; or it may be put with other lumber, in a ſmall tender, moored near the floating factory.

fection,

fection, read before the Philofophical Society at Edinburgh.

But even after ufing the means we have juft mentioned, it may be alfo neceffary to attend to fome directions which I have given in the Effay on preferving health in thofe climates: they fhould refrain from intemperance and exceffes of every kind. We do not recommend to them to ufe any medical regimen, but to obferve an habitual regularity. And as proof of what may be done, by a proper attention to thofe directions in the moft fickly feafons and climates, I fhall fubjoin the following particulars, communicated to me by Mr. Boon, who refided for three years at Senegal, as furgeon general to the troops.

Mr. Boon being furnifhed with a copy of my Effay on preferving feamen, he and feveral of the officers followed the directions therein contained. Governor Worge, Mr. Boon, and others, drank every morning for breakfaft, by way of tea, an infufion of the bark, or of fome other bitter ingredient, fuch

ſuch as chamomile, gentian, orange-peel, or the like, in warm water. Sometimes they mixed with their tea a ſmall quantity of the tincture of the bark. They drank theſe bitters morning and evening, and took a gentle doſe of manna, with purging ſalts once or twice a week. They were abſtemious in the article of food, and were particularly careful not to drink wine or ſpirits to exceſs: by which means their ſtomachs and bowels were preſerved in ſuch a ſtate, as greatly reſiſted the attack of thoſe bilious fevers, fluxes, and other diſorders, which raged with deſtructive violence during the ſickly ſeaſon. Experience had ſo fully convinced them of the efficacy of thoſe means, that the uſe of them became general; and when their ſtock of bark was exhauſted, the moſt common bitter herbs, or roots, ſold at an extravagant price.—Much about this time, a ſhip from New-York arrived at Senegal, which had on board ſome bark, and a quantity of gentian-root, orange-peel, and common wormwood, together with ſome bottles of Stoughton's drops. Theſe bitters became a valuable cargo for the proprietor,

 and

and were bought up at a high price by the governor and others who could afford to purchase them.

SECT. IV.

A change of air useful in fevers. Objections answered.

HAVING thus directed such expedients as will afford an effectual protection to the merchants, and all our factories near the sea; and having recommended a plan for all newly arrived Europeans, to preserve them from sickness, in the most unhealthy seasons and climates; we now proceed to offer some further directions, for the benefit of such as either neglect those already given, or who, from various circumstances, cannot put them in practice. There may be many whose indispensible business requires their constant residence in unhealthy places ashore, and who must therefore be exposed to the violent attacks of

of ſickneſs. In this caſe, the preſervation and perfect recovery of ſuch perſons will in a great meaſure depend upon an immediate change of air, when they are ſeized with the prevailing ſickneſs of the country.

I acknowledge it to be a new thing, to propoſe the immediate removal of a perſon labouring under a violent fever, to ſome diſtant place, let the ſymptoms be what they will.—It may be objected, that the gentleſt motion will, in many ſuch caſes, affect the head, bring on a delirium, or increaſe the ſymptoms of the diſeaſe. It may further be urged, that as uninterrupted reſt and quiet are ſo neceſſary to the welfare of ſuch patients, the hurry of motion, and even the diſturbance produced by taking them out of bed, but eſpecially by expoſing them to the open air, muſt be highly injurious.

The experience of many years in theſe matters has convinced me, that ſuch apprehenſions of danger are vulgar, groundleſs and erroneous; and I aſſert it, as a certain truth, which I have had the moſt ample means of knowing, that perſons labouring

under fevers, fluxes, and other diſeaſes, may with great ſafety be moved from one place to another: nay more, that by a removal of them, with proper care, from an impure to a pure air, ſuch patients received immediate benefit. Of many thouſand patients afflicted with fevers, whom I have viſited in Haſlar hoſpital, for eight years paſt, nine tenths of them were moved during the continuance of their fever, either from Spithead, from the ſhips in the harbour, or from the marine infirmary at Portſmouth: and I do not remember that any patient was injured by being carefully brought in a boat, or otherwiſe, to the hoſpital; on the contrary, I am perſuaded that many hundreds, afflicted with the moſt dangerous and malignant ſymptoms of that diſeaſe, have received great benefit by a removal from the foul air of their ſhips, into the pure air of the hoſpital.

This objection being obviated, the firſt ſtep then to be taken for the preſervation of ſuch Europeans as are taken ill on ſhore, during the rage of an epidemic ſickneſs, is to remove them immediately as far as poſ-

ſible

ſible from the main cauſe, and perhaps the only ſource of their ſickneſs; that is, from the land into the ſea air.

SECT. V.

Medicines ineffectual in a bad air. Effects of unwholeſome air on perſons in health; and on ſuch as are ſick. Conſequences of removing the ſick in fevers, from an impure, into a pure air. How long the effects of bad air lie concealed in the body; and how far the fever thence produced is contagious.

THE following relation is not unapplicable to our preſent ſubject. I was lately deſired to viſit an alms-houſe, in which a low malignant fever prevailed, which had proved fatal to ſeveral of the poor people lodged there. The apothecary informed me, that he had treated this contagious fever in the moſt approved way, and with

ſuch remedies as are preſcribed by writers of character on infectious fevers, without being able to ſtop the progreſs of the diſeaſe, or its mortality. Upon entering into this houſe, I perceived two or three dead bodies lying in the ſame chamber with the ſick.—Upon the beds of ſuch as had died, new patients were laid, and the chambers abounded ſo much with ſtench and putrefaction, that without aſking the ſick any queſtions, or inquiring farther into their caſes, I gave it as my opinion, that as long as there remained ſuch a conſtant ſource of infection, proceeding from filth and naſtineſs in that place, the preſcription of the moſt efficacious medicines would have little or no effect. This I found the apothecary had repeatedly but unſucceſsfully repreſented to the overſeers of the poor.

In like manner, when a perſon is ſeized with a fever, proceeding from the bad air of a country, his illneſs, while he continues there, is daily, nay hourly, ſtrengthened and reinforced, by a conſtant application, or as it were inoculation of the morbid cauſe. We

are taught by fatal experience, that the moſt ſovereign remedies, and the beſt methods of cure that can be propoſed for the relief of ſuch perſons, while they breathe an unhealthy air, are moſt frequently rendered ineffectual. Diſeaſes in ſuch a ſituation generally become more anomalous, and are both attended and followed by ſuch ſymptoms, as in all probability would ſeldom appear in a purer air. From this cauſe ſome of the beſt remedies have been found fault with, notwithſtanding that they produced all the effects which could poſſibly be expected from them, whilſt the patient was conſtantly expoſed to theſe ſources of diſeaſe. This calumny has chiefly fallen upon the bark.

In the late ſiege of the Havannah, while the Engliſh troops ſuffered ſo much by the diſeaſes incident to Europeans in thoſe climates, the adminiſtration of the bark was blamed, becauſe, after the fever had been removed by its efficacy, the patients were apt to be afflicted either with the jaundice, the dropſy, or a ſwelling and obſtruction in the liver.—But ſuch diſeaſes and obſtructions

of the liver were much leſs dangerous and fatal than the fever, and were not the effects of the bark, but of the patient's continuing in ſo impure an air, and of the duration of the fever *.

But to ſet this matter in the cleareſt light, we ſhall here point out the effects of an impure air; firſt, on perſons in health; ſecondly, on ſuch as are ſick; and laſtly, the conſequences of removing perſons immediately, when taken ill in ſuch an air, into a place where that element is more pure and wholeſome.

Firſt, we are to conſider the effects of the impure air in hot countries, during the rainy ſeaſons, on the human body, when in health. And here it is remarkable, that the breaſt and lungs, as alſo the throat, through which it paſſes, are generally the parts of the body which ſuffer the leaſt, though in conſtant and immediate contact with it.

* See of this a full proof, in the Appendix to this work.

The

The parts chiefly affected by an impure air, in a hot climate, are the brain and ſtomach: or in other words, the nervous ſyſtem, and the organs of alimentary digeſtion. Strangers unaccuſtomed to ſuch an air, though ſeemingly in health, feel an oppreſſion and lowneſs of ſpirits;—they become inactive, have a great inclination to reſt or ſleep, and often complain of a head-ach;—their reaſoning faculties are ſenſibly impaired, particularly the memory.

Every kind of ſtudy, or attention of the mind to any ſubject, as likewiſe venery, are hurtful, and frequently attended with fatal conſequences. Young people in particular are apt to have their head much diſordered, to be ſtupid or ſlightly delirious at times.

The paſſions of the mind have, in this ſituation, a much more quick and violent effect on the body, than in a purer and cooler air. An exceſs of paſſion often brings on an inſtantaneous attack of a fever; a violent fit of anger, or grief, will immediately produce

produce a jaundice, or the yellow fever: the ſight of a corpſe, or any other object of horror, and even a ſhocking ſtory told to a perſon, have been often known, through an impreſſion of fear upon the mind, to bring on a delirium, ſometimes a violent vomiting and purging, which have carried off the patient in twenty-four hours.

A phrenſy or delirium is often the firſt and immediate effect of bad air.——It has alſo a great influence on the ſtomach and inteſtines: it generally gives a loathing and indigeſtion, and an averſion to much food; together with frequent bilious ſtools, which ferment like yeſt. Thoſe who ſeem to be otherwiſe in good health, become of a yellow complexion. Exceſſes, either in eating or drinking, prove much more pernicious to the conſtitution than in a purer air. A ſurfeit of fruit, or of groſs food, but eſpecially undue mixtures in the ſtomach of different things, ſuch as fleſh, fiſh and fruits, taken at one meal, will often produce a violent dyſentery, or a fatal cholera morbus.

Any

Any debauch or drunkenneſs will often give a fever, which, in leſs than 48 hours, terminates in the death of the patient.

Theſe are the effects of that noxious air which is often breathed by Europeans in many unhealthy parts of the world. It is always a proof of a bad air, when wounds, which are nearly brought to heal, break out ſuddenly afreſh, attended with great putrefaction of the parts. This happens both from the putrid air of marſhes and of impure ditches, as alſo when the hot ſuffocating winds blow from the deſarts.

As we have conſidered the effects of impure and malignant air on vigorous and healthy conſtitutions, it will be proper next to obſerve its influence on ſick perſons. For this purpoſe, we ſhall lay before you the effects of the air from marſhes in the climate of Jamaica.

On that iſland a commodious and excellent marine hoſpital was erected, for the reception of the ſick ſeamen in his Majeſty's ſhips

ſhips on that ſtation; which, for its uſefulneſs and grandeur, was called Greenwich Hoſpital. It was unfortunately built near a marſh, upon a moſt unhealthy ſpot of ground. The effects of this unhealthy ſituation were, that when a patient was ſent thither, with only a gentle or intermitting fever, this mild indiſpoſition was apt to be changed either into a malignant fever, a bloody flux, or ſome other mortal diſtemper.

It was obſerved that the yellow Weſt Indian fever often reigned there, attended with the moſt profuſe evacuations of blood, by vomiting, ſtools, and even by every pore of the body; when no ſuch ſymptoms diſtreſſed thoſe patients whoſe caſes had been ſimilar, and who were permitted to remain in their ſhips.

The recovery of patients in that hoſpital was obſerved to be very tedious and uncertain: the leaſt indiſcretion or irregularity brought on a relapſe. After a flux had been ſtopped for ſome days, the eating of any ſort of food which had a putrid tendency, ſuch as even a meſs of broth, would ſome-

times

times in a few hours bring on a return of the diſeaſe, accompanied with all its violent ſymptoms. Neither did this proceed from any ſource of infection in the hoſpital, or from its being too much crowded with patients: theſe things happened even when a ſmall number of patients were lodged in the beſt aired and in the cleaneſt wards. The mortality in this houſe was ſo great, and the cauſe of it ſo obvious, that there was a neceſſity for deſerting it: no more ſick were permitted to be ſent thither; and another hoſpital, in a better air, is now fitted up for their reception.

In the laſt place, we may obſerve the excellent effects produced by removing, from an unhealthy into a pure air, the ſick, labouring under the moſt fatal diſeaſes.

Thoſe who were carried to ſea in the Middleburgh ſhip of war, ſpeedily recovered. Their fluxes and fevers loſt the dangerous ſymptoms, and an immediate ſtop was put to the mortality which raged among them at Curaçoa. During the ſickneſs at Cadiz and Penſacola, the removal of the ſick into ſhips

ſhips which lay at anchor in a pure air, produced the ſame happy effects.

A malignant ſickneſs in the iſlands of Grenada and the Grenadines, proved very fatal to the Engliſh, who, upon the concluſion of the late peace, firſt went over to ſettle there; but it was obſerved, that ſuch of the ſick as were put on board the ſhips to be ſent to Barbadoes, generally recovered at ſea, before they could reach their intended port.

Innumerable obſervations might be given, to confirm what has been advanced on this ſubject: to multiply them is unneceſſary; as the effects of a change of air, upon agues and fevers in England, are ſo well known, and as the immediate ſucceſs which attends the uſe of the bark, and other remedies, in a purer atmoſphere, is aſcertained by daily practice.

It remains only to be added, that in the moſt malignant diſeaſes, the immediate removal of the patient into a purer air is often the only method to preſerve his life.

Thus

Thus the Medway and Panther suffered great distress at Batavia, by a violent and mortal fever; of which we have already taken notice. But all those who had been seized on board the Medway, as soon as she put to sea, recovered immediately, to the number of 35 or 40: whereas the Panther, by continuing at Batavia a fortnight longer, lost above 50 men; and although there were some few who died on board the Medway, after she left Batavia, they were only such as had been long ill, and who seemed to perish for want of proper necessaries and restoratives at sea. Upon leaving that un-unhealthy port the fever entirely disappeared.

It is not to be understood, that so fortunate a circumstance will always attend ships upon their leaving an unhealthy place: the effects of the injury already received on shore from the land air, may not appear till some time after the ship has been at sea; or a contagion may be generated, even at sea, from causes which it is difficult to ascertain.

Two

Two queſtions, therefore, naturally ariſe from the ſubject, equally curious and important.

Firſt, How long a taint from the land air may lie concealed within the body, before it produces a fever?

Secondly, How far this fever is contagious?

With regard to the firſt queſtion, from comparing many inſtances of people, who have ſlept on ſhore during the ſickly ſeaſon, and in conſequence of it, who alone have been taken ill out of the whole ſhip's company, then lying in an open road, it appears,—That ſome are immediately ſeized with ſickneſs or delirium, though in many theſe do not come on till they have been on board for two or three days; ſeveral have been only ſlightly indiſpoſed for the firſt five or ſix days, and in a few the ſymptoms of indiſpoſition have not appeared before the tenth or twelfth day.

How far this fever, as produced by the land air, is contagious, it is more difficult to

to determine; the exemption from it, which thoſe generally enjoy who ſleep at a diſtance from the ſhore, while others who have ſuffered by a neglect of that precaution are ſick on board, ſeems to prove it void of any contagion. But, upon a more narrow examination, we will be inclined to adopt a contrary opinion. Paſſing in ſilence the many means whereby infection may be communicated, ſo as to elude the ſtricteſt enquiry, not only immediately from the diſeaſed perſon, but from his clothes or attendants, we need inſiſt only on poſitive facts.

In the Weaſel and Hound, two ſloops of war, which happened to be in the river Gambia in the beginning of Auguſt 1769, at which time the rainy ſeaſon commenced that year, it was obſerved, the ſickneſs did not begin till two or three days after they received an infected perſon on board, notwithſtanding they had been eight or ten days in that river.

Their being at the ſame time expoſed to the land air, almoſt equally to thoſe who were in the fort, by anchoring up the river,

might greatly increaſe the malignity of the diſeaſe; but does not weaken the opinion of its being received by contagion, which is fully proved by a curious particular given by Mr. Robertſon, in an account of his own caſe.

This gentleman, when feeling the pulſe of a boy dying in the fever, immediately as he expired received a ſhock, as though electrified, attended with a diſagreeable ſenſation not eaſily to be expreſſed, and quickly followed by a proſtration both of ſtrength and ſpirits, ſo that he had almoſt fainted before he reached his apartment; and afterwards ſuffered a very ſevere attack of the fever.

Both theſe poſitions will receive further confirmation by what occurred on board the Merlin ſloop, which was at Gambia in the ſame month, the preceding year.

She continued ſix days in the river, being employed in wooding and watering. While there, all the men were in perfect health, but in about two days after they

put to ſea, thoſe who had been employed in wooding were ſucceſſively taken ill, then thoſe who had been employed in the duty of watering. Theſe men alone were at firſt ſeized with the fever, and ſeveral in a day continued to fall ſick for ſix or ſeven days afterwards, until at length almoſt all that had been employed on thoſe ſervices were ill; after them their attendants were ſeized with the fever, and in ſuch numbers, as to leave no doubt of the diſeaſe being infectious.

Many other inſtances may be produced of a ſimilar nature, which, from their number, it will be unneceſſary here to mention.

We may thence juſtly conclude, that the fever may be communicated by contagion; but this contagion is very ſlight, unleſs cooperating with a bad air; and in a ſhip is often greatly checked, if not wholely deſtroyed, by going out into the open ſea. For notwithſtanding the virulence of the diſtemper was greatly inforced in thoſe

ſloops, when up the river Gambia, by a conſtant expoſition to the noxious land air; yet it was ſo much checked upon thoſe ſhips putting to ſea, that they ſcarcely buried one tenth of the men which the fort generally does every rainy ſeaſon, out of a proportional number: of ninety men, which each of theſe ſloops had on board, the Weaſel loſt ten, the Hound ſix, and in the preceding year the Merlin four, who died of that fever, being 20 in all out of the number of 270 perſons, who were on board thoſe ſloops.

A virulent contagion may indeed occur in ſhips at ſea, but that generally proceeds from other cauſes, into which our ſubject does not at preſent permit us to enquire.

SECT. VI.

The ſea air found beneficial in an epidemical fever at Naples. An infirmary-ſhip recommended. Its peculiar advantages.

WHETHER there be any quality in the ſea air beſides its purity, that renders it ſo particularly healthy to patients labouring under thoſe remitting fevers, and other diſeaſes which are the ſubject of this treatiſe, I will not take upon me to determine; as my intention is to advance facts, and not conjectures. This much is certain, that in ſome other fevers, a change of air has been found very beneficial, and the recovery of the patients has been greatly promoted by removing them from inland places into the ſea air. Of this, in the year 1764, the kingdom of Naples furniſhes a very remarkable example; for the account of which, as well as for many uſeful obſervations given in this work, I am obliged to my friend Dr. John Eliot, an eminent phyſician in London.

From bad policy in permitting too great an exportation of corn, there was not a ſufficient ſtore left in the publick granaries of Naples, and the country became deſtitute of proviſions.

In the months of April and May, the ſcarcity was ſo great, that the poor people tore up the graſs and green corn for ſubſiſtence, and fed on every thing in which they ſuppoſed there was any nouriſhment.

A malignant fever came on, and raged with more violence, as the famine increaſed. Hunger drove multitudes of people from the country to the capital, in hopes of being better able to procure ſubſiſtence there. The city became more and more crouded, and every day numbers dropped down dead in the ſtreets.

The force of hunger became ſo ſtrong as to break through the firmeſt ties of nature; mothers threw away their children, fathers forſook both; each perſon being fully employed in ſearch of food for himſelf. So great and ſo general was this ſcarcity,

ſcarcity, that villages became depopulated by death and migration.

The kingdom contained about two millions of people, one fifth of whom the ſtate is ſuppoſed to have loſt by this calamity: two hundred thouſand of theſe by death, the reſt by deſerting their habitations, to ſeek ſubſiſtence in the neighbouring countries.

The ſituation of Naples is remarkably healthy; it is very populous, the ſtreets are numerous, the houſes five or ſix ſtories high, and very much crouded. The inhabitants are extremely remiſs in the article of cleanlineſs, both within and without their habitations.

When we conſider all theſe circumſtances, the heat of the climate, and the want of proper food, it will not appear ſurpriſing, that this malignant fever raged with uncommon violence, and was every where propagated, from the number of ſick diſperſed up and down in all the quarters of

the city, the little care taken of them, and the negligence in burying the dead.

The abſurd cuſtom of expoſing bodies to view when carrying to the grave, might even add to the progreſs of the diſtemper.

This malignant fever was accompanied with worms in the ſtomach and inteſtines during the month of May; in June worms were leſs frequent. In July it became highly infectious, was attended with petechiæ, ſwellings of the parotid glands, obſtinate delirium, violent vomiting, and fluxes of blood *.

This diſeaſe raged with the moſt unremitting violence for a conſiderable time, till it was happily obſerved, that the ſick who were moved into the hoſpitals which ſtood

* Vegetable acids were given in large quantities. Ice-water, and the bark were the great remedies. Muſk was likewiſe found extremely uſeful in relieving the head-ach.

Mineral acids, where livid blotches and other high ſymptoms of putrefaction appeared, were adminiſtered plentifully with the beſt effects.

near

near the ſea, recovered much quicker than in other places; and that few of them died there.

Upon this being repreſented to the king, money was ordered out of the treaſury, for the fitting up of hoſpitals by the ſea for the public benefit; and even after they became crouded, the number that died was inconſiderable in proportion to thoſe loſt in other places. In theſe well ventilated hoſpitals, open to the ſea air, the progreſs of the contagion was entirely ſtopped; and none of the nurſes or attendants on the ſick were infected with the diſtemper.

At the ſame time plenty of corn was procured, and good proviſions, which entirely put an end to this fatal diſtemper.

We may conclude from theſe obſervations, that if, on the coaſt of Guinea, and on all places in the Eaſt and Weſt Indies, where the Engliſh factories are near the ſea, there was another ſhip (beſides that appropriated for the gentlemen of the factory) lying at a proper diſtance from the land, during

during the ſickly ſeaſon, to receive Europeans immediately upon being taken ill: it would be a certain means of ſaving many lives. This ſhip might be conſidered as an hoſpital for the fort or factory.

The name of hoſpital, or hoſpital ſhip, may convey a frightful idea of ſickneſs and mortality to ſome people, but without any reaſon, as this veſſel ought to be kept perfectly clean, and ſhould never be crouded.

Beſides, on board of her the ſick will be well accommodated, and will always breathe the pureſt air. Upon the leaſt ſuſpicion of infection, it may moſt ſpeedily and effectually be removed by the methods given in my Eſſay on Fevers and Infection, p. 44. & ſeq.

In Europe all nations have hoſpitals, and many of them have found it abſolutely neceſſary to erect hoſpitals or infirmaries for the ſick in their ſettlements and factories abroad.

The

The difficulty is, to find a convenient and healthy ſpot. The manner of obviating this we point out; and if, by way of example, a ſhip or hulk was moored at the mouth of the river Senegal, and properly fitted for the reception of the ſick in that garriſon and factory, it would be a means of ſaving a great number of lives during the rainy ſeaſons.

Transferring the ſick, and their hoſpital, from the land to the water, would put an end to the dreadful mortality amongſt our troops in that part of the world. This method is therefore more particularly recommended, on account of the ſoldiers ſtationed at Senegal, and will be attended with many advantages to them.

In the firſt place, on board a ſhip, with proper care, a greater degree of neatneſs and cleanlineſs may be procured for the ſick, by means of funnels pointing to the ſea, and waſh-cocks to cleanſe them occaſionally, than in moſt infirmaries on land.

2dly, They may there be ſupplied with the moſt wholeſome * freſh water, from the element which ſurrounds them, by a ſimple diſtillation; a diſcovery which the author of theſe ſheets was ſo fortunate as to make in the year 1761: if more be wanted for the moſt common uſes, ſails or awnings, properly extended, will procure them a ſufficient quantity of rain water.

Here it may not be improper to take notice of a common opinion, which prevails with many in thoſe parts abroad, that ſuch as have been thoroughly wet with rain or other freſh water, will from thence ſuffer no indiſpoſition, provided that before putting on dry clothes they dip themſelves in the ſalt water, or their wet ſkin all over with a ſpunge dipped in it.

3dly, Having already † pointed out the methods of rendering the air in a ſhip at all times wholeſome, by means of purifying

* Eſſay on preſerving ſeamen, 2d edit. page 85, 86, &c. where it was firſt publiſhed.

† Idem, page 7, 105, &c.

fumes

fumes and fires, we ſhall only add on this head, that when a ventilation, or change of air becomes neceſſary, it may be more effectually accompliſhed by opening ſome port-holes in a ſhip, than in moſt of the chambers on land. A ventilator may likewiſe be provided, for the more effectual drying of the timber, and of the lower apartments in the ſhip: it may be worked by a wind-mill fly. It is here neceſſary to obſerve, that all theſe ventilators ſhould be made uſe of only during dry weather; and for the further preſervation of the ſhip, the bottom ſhould be ſheathed with copper. From the rains the ſhip may be defended by a timber ſhade or ſpare deck, projecting a little over her ſides. This will alſo afford an effectual protection from the violent heat of the ſun, during the intervals of the ſhowers, and occaſion an agreeable ventilation when there is any, the leaſt wind.

4thly, Beſides the great benefits of dry, neat, and clean accommodations, of good water, and of a pure air, it is in the watery element alone that the moſt wholeſome nouriſhment, and the moſt proper food for the perfect

perfect re-eſtabliſhment of health, is to be found: I mean, a great plenty and variety of fiſh. When the ſick in thoſe countries can be ſupplied with green turtle, they recover very quickly, not only from the ſcurvy, but from other diſeaſes proceeding from a relaxed habit of body, and a watery ſtate of the blood. It has been often remarked, that fluxes, dropſies, and an infirm conſtitution of body, which are the frequent conſequences of acute diſeaſes in thoſe climates, proceed in a great meaſure from the low poor diet of the country, conſiſting chiefly of boiled rice, lean goats, fowls, and food of that kind; which render the recovery of Europeans extremely ſlow and tedious.

In thoſe climates, fiſh caught at ſea are with difficulty procured for ſick or weak people, as they cannot be preſerved freſh many hours, and are often tainted before they can be brought on ſhore. They are ſo apt to corrupt, even during the coolneſs of the night air, that it is a prevalent opinion among the fiſhermen there, that the moonlight in particular has a quick and powerful influence in ſpoiling their fiſh.

But

But by a peculiar bleſſing of Providence, not only the river Senegal, but all the great rivers whoſe ſources are within the tropics, have depoſited, by their annual inundations, great quantities of ſlime and mud at their openings into the ſea, which form what are called the bars to thoſe rivers. Thoſe bars or ſhoals, conſiſting of a fine ſoft ooze, often extend themſelves many miles from the land, and afford not only a ſafe anchorage for both the floating factories and infirmary ſhips, but they abound alſo with an incredible quantity of excellent fiſh; and one man in the infirmary ſhip lying off Senegal, or in moſt other places on the coaſt of Guinea, will be able to catch as many fiſh of different ſorts in two hours, as will be ſufficient for the nouriſhment of a hundred ſick people. It has been found by experience, that no food whatever contributes more to the perfect recovery of health and ſtrength, and to the prevention of the fatal conſequences of fevers in hot climates, than fiſh, or rich nouriſhing fiſh-ſoup, warmed with the ſpices of the country, and, if neceſſary, rendered palatable by the addition of lime-juice.

Upon

Upon the whole, the immediate removal of the patient from a bad air, as ſoon as he is perceived to be affected by it, into the infirmary ſhip, will, in all probability, render his diſeaſe mild, and eaſily curable, and his recovery ſpeedy and perfect. The conſtitution thus preſerved, will at length become ſo ſeaſoned and habituated to the climate, in a courſe of time, that it will be rendered much leſs ſuſceptible of any injurious impreſſions either of the air or ſoil.— One merchant, factor, or ſoldier, thus conſtitutionally naturalized to the country, becomes more uſeful, and his ſervices may be more depended upon there, than ten newly arrived unſeaſoned Europeans.

It has been a received opinion, that the firſt fever or fit of ſickneſs alters the conſtitution of the body, ſo as to ſeaſon it to a new climate; but I am of opinion, that the ſudden changes of climates are greatly the cauſes of ſickneſs, and that a ſeaſoned conſtitution in any part of the word is chiefly to be acquired by remaining there for ſome length of time.

From

From the very numerous opportunities I have had of knowing the general ſtate of health enjoyed by the ſeamen on board his Majeſty's ſhips in foreign voyages, it appears, that ſudden changes from heat to cold, or from cold to heat, produce almoſt ſimilar effects.

Thus, if 400 or 500 ſeamen and ſoldiers ſail from England to the Weſt Indies, and make a ſudden tranſition from a cold climate to a very great degree of heat, many of them will be ſeized with a diarrhœa; and ſuch of them as drink immoderately of rum newly diſtilled, on their firſt arrival at Jamaica, will probably die of violent fevers: but if the men are kept on board ſhips, and much at ſea: if the ſhip, eſpecially during the ſickly ſeaſon, does not put into any very unhealthy port, after being twelve months in the Weſt Indies, they will become perfectly ſeaſoned to that climate, and enjoy as good a ſtate of health as if they were in England.

In like manner, if the ſtationed ſhips, which are generally relieved at the expira-

tion of three years, arrive upon the coaſt of England in the winter, and are long detained at ſea by contrary winds, in a very cold ſeaſon, the men having been inured to a hot climate, will again be attacked with diarrhœas; the cure or removal of which will entirely depend on keeping the patients warm.

CHAP. II.

Advice for the preſervation of ſuch Europeans as reſide in inland countries.

SECT. I.

Unwholeſome ſpots of ground in the moſt healthy countries. Healthy ſpots in the moſt ſickly.

WE come now to point out a method of preventing the mortality which attends theſe ſituations, where the advantages of a floating-factory cannot be enjoyed: and it is to be hoped, for the ſake of humanity, that thoſe who have the power of directing, will pay ſome regard to them.

There are many who inhabit either inland places, at a great diſtance from the ſea; or where they cannot have the benefit of a ſecurity on that element, from the want of a ſafe anchorage for ſhips, at the neceſſary diſtance from the ſhore; or, where ſalt and unwholeſome marſhes are formed by frequent inundations of the ſea; or, where the ſhores are lined with ſtinking ooze, mud, and aquatic weeds or plants of a noxious quality.

Now, in all thoſe places, during the ſickly ſeaſons, Europeans muſt retire into the country, at ſome ſmall diſtance from ſuch unwholeſome marſhes and foul ſhores. Upon this occaſion it is neceſſary to obſerve two things:

1ſt, That the moſt healthy countries in the world generally contain certain ſpots of ground, where ſtrangers are ſubject to the attacks of ſickneſs.

2dly, That there is hardly to be found any iſland, or any large extent of continent, that does not contain ſome places, where Europeans

Europeans may enjoy an uninterrupted ſtate of health during all the ſeaſons of the year.

In proof of the firſt poſition, we may take a view of as healthy a piece of ground, for its extent, as any in England; I mean the Iſle of Wight. This Montpelier of England, for its air and productions, has a ſmall town called Brading, where agues prevail much, and which, on account of their obſtinacy, are by the iſlanders called Kentiſh agues. This ſickneſs, which is little known in many places of the iſland, does not often extend itſelf a mile from Brading, but is particularly inveterate in one farm-houſe in that neighbourhood. The moſt healthy iſland of St. Chriſtophers, in the Weſt Indies, has its Baſſe-terre, which, like Bridgetown in Barbadoes, proves ſickly to ſtrangers at particular ſeaſons.

As a proof of the ſecond poſition, we ſhall offer Antigua. This iſland, eſpecially near Engliſh Harbour, is remarkable for its unhealthfulneſs, as our ſhips of war frequently experience in the loſs of their men, by

by the yellow fever and flux, when they refit in that harbour. But an abſolute ſafety, and a ſecure retreat from theſe diſeaſes, are to be found in the high mountains of that iſland, eſpecially in that called Monk's Hill; of which the following affords a convincing proof.—

In the beginning of the laſt war, about the year 1756, when the French neutrals were removed from Nova Scotia, a ſhip bound to Virginia, in which they were embarked, was driven by ſtreſs of weather to the iſland of Antigua. This mixed company of men, women and children were all ſent to Monk's Hill, in order to recover from the fatigues of their voyage. Soon after this a general ſickneſs raged in the iſland, when our ſeamen in Engliſh Harbour ſuffered a great mortality by the yellow fever and flux; during which time, the Engliſh ſoldiers, who compoſed the garriſon at Monk's Hill, and the neutral French, though but lately arrived from their cold native country, enjoyed a moſt perfect ſtate of health, being totally exempted from the prevailing diſtempers of the iſland.

When

When the Engliſh troops were at Guadaloupe, they found one part of that iſland extremely pleaſant and healthy; and another part of it ſo ſickly, that when a regiment or company of ſoldiers was ordered thither, they were almoſt certain of loſing a great part of their number.

The iſland of Dominica is in moſt places woody and unhealthy, and eſpecially about Prince Rupert's Bay; yet there are ſeveral French families in it, who by fixing their reſidence on the ſides of hills, live free from the attacks of agues and fevers, the diſeaſes common there; and thus they enjoy as good a ſtate of health and conſtitution as if they were in France.

In the unhealthy iſland of St. Jago, there is a place called St. Domingo, where, on account of its wholeſome air, it is uſual for the governors, upon their arrival from Europe, to ſpend ſome time before they venture to fix their reſidence at the capital: by this means they gradually become ſeaſoned to that ſickly climate.

In the neighbourhood of Mobile, Penſacola, and other places in the hot, ſouthern, and leſs healthy parts of Weſt Florida, there are ſeveral elevated ſituations, dry, and expoſed to the winds, which would afford a ſafe and certain retreat from the diſeaſes which prevail in the months of July, Auguſt, and September.

SECT. II.

Purity of the air in the Braſils, and in many other places in the Torrid Zone. An elevated and temperate ſituation on the ſide of a hill or mountain recommended.

THE country of Braſil is eſteemed by the Portugueſe a paradiſe, chiefly on account of the purity of its air in moſt places. When the ſun is vertical, the air is refreſhed and cooled by the ſea breezes; and its inland parts are fanned with ſtill cooler breezes from the high mountains.— So that the Portugueſe prefer the air of the Braſils, at the ſmall diſtance of a few degrees

grees from the Equator, to that of their native country.

From 10 degrees north of the Æquinoctial, to 55 ſouth, there runs through the continent of America a continued chain of very high mountains, called the Andes or Cordilleras. The tops of thoſe mountains, even under the Equator, are covered with ſnow, and by reaſon of the ſeverity of the cold are rendered uninhabitable to man or beaſt.

In deſcending from thence, the traveller begins to breathe a healthy and temperate air, where the joyful ſeaſon of ſpring, with all the early productions of nature, preſent themſelves.

Deſcending ſtill lower on the ſides of thoſe mountains, he finds himſelf ſurrounded with rich and luxuriant paſtures, breathing forth the odours of a pleaſant and ſerene ſummer. Thus, under the ſcorching heat of a vertical ſun, there are large extents of country, where Europeans may breathe a pure

a pure untainted air, of ſuch a temperature as beſt ſuits their conſtitutions.

We may truly obſerve, that heat does not altogether depend upon a proximity to the Equator, but varies at inconſiderable diſtances, chiefly according to the elevation of the ground, and its being well perflated, as alſo from the nature of the ſoil.

Upon this laſt, the temperature of the climate, the colour, ſtrength and activity, the conſtitutions and health of the inhabitants greatly depend. This truth is well known to thoſe who trade for ſlaves on the African coaſt. The negroes they purchaſe are dull and ſtupid, lively and ingenious, ſickly or robuſt, long or ſhort lived, according to the nature of the country or the ſoil from whence they are brought.

From all this I infer, That the ſafeſt retreats, not only from the ſultry heats, and the inundations of a low country, but alſo from the ſickneſs attendant upon them, are to be found on the ſides of hills or mountains, where there are no moraſſes within

three

three miles; preferring ſuch places alſo, where the vapour ariſing from the ſurrounding vallies cannot affect them, at leaſt in its perpendicular aſcent.——Experience fully confirms this truth,—That in ſuch elevated and temperate ſituations, where the ſoil is dry and gravelly, and clear from wood, ſhrubs, or ſtagnating water, Europeans enjoy good health in the hotteſt climates, during all the ſeaſons of the year.

SECT. III.

An aſylum for health to be met with in almoſt all parts of the world.

THIS aſylum for health is to be met with in almoſt all quarters of the globe. The weary traveller, even in ſome parts of the ſultry deſarts of Arabia, may, in the middle of ſummer, behold from afar the ſummits of the Perſian and Turcomanian mountains covered with ſnow, and their ſides lined with a refreſhing verdure, which

is

is conſtantly fanned with a pure and temperate air.

Moſt of our principal factories in the Eaſt Indies have in their neighbourhood places of eaſy and ſafe retreat from ſickneſs during the wet ſeaſon. In Sumatra, Fort Marlborough affords a retreat tolerably ſafe and convenient, at the diſtance only of three or four miles from our moſt ſickly ſettlement of Bencoolen: in which fort the Engliſh merchants ought conſtantly to ſleep during that ſeaſon, and for ſome time after it; while others who chooſe it may go to Sillebar. The unhealthy town of Calcutta, in Bengal, has in its neighbourhood the healthy ſituations of Baraſatte and Garatte; where the gentlemen reſiding at Bengal ſhould retire, in the months of July, Auguſt, September, and October.

The Dutch at Batavia, for the benefit of a quick and eaſy conveyance of ſuch as are in a convaleſcent ſtate, have made an excellent road, for 70 miles, leading from that city to the mountains, equal to any turnpike road in England: but it were to be wiſhed, that

that not only convaleſcents, but ſuch ſick perſons whoſe caſes will admit of ſo long a journey, were alſo ſent thither, or at leaſt to the more healthy ſituations of Cerebon, Samaring, or Tanjapour, in its neighbourhood.

The Engliſh factory at Bombay enjoys the benefit of having ſeveral riſing grounds near them, from whence, during the rainy ſeaſons, they may in ſafety behold the adjacent country covered with water; the receſs of which leaves innumerable pools of ſtagnating water, full of frogs and * dead fiſh, whoſe ſtench proves very injurious to European conſtitutions.

Within nine miles of Madras ſtands the Mount St. Thomas, juſtly eſteemed for its

* It is a phænomenon in nature not eaſily to be accounted for, but at the ſame an inconteſtible fact, that in ſtagnating pools of water at Bombay, which have no communication with any river or the ſea, and are produced ſolely by the rains, living fiſh are generated, of which many perſons have eaten, and which, upon the drying up of theſe pools, die, and are corrupted as above mentioned.

air,

air, the Montpelier of all the Englifh fettlements in India. Perfons labouring under a violent intermitting fever at Bengal, are no fooner brought to Madras, than their diftemper commonly leaves them. Such as have been reduced to fo great weaknefs as to be under the neceffity of being carried up to St. Thomas's Mount, have in three or four days acquired fuch a degree of health and ftrength, as to be able of themfelves to afcend 127 fteps made in that rock for the more eafy accefs to this paradife of health.

Not only continents, but moft of the large iflands in every quarter of the world, have ridges of high mountains, where the air proves healthy to European conftitutions. But we fhall treat only at prefent of thofe poffeffed by the Englifh in the Weft Indies.

I have already mentioned Monk's Hill in Antigua, as a fafe retreat from ficknefs in that ifland. We have alfo taken notice of the wholefomenefs of the air in the mountains of Dominica; and it is to be hoped, that as foon as Granada and the Grenadines (which have lately proved fo fatal to the

Englifh

English planters) are cleared of woods, due attention will be given to situations so eligible for houses; the advantages of which we have so strongly pointed out: we shall then hear nothing more of fatal diseases sweeping off the inhabitants of these islands. In Barbadoes there is a hill called Scotland, or the Highlands, where the air is purer, and more wholesome, than in any other place of that pleasant and healthy island.

SECT. IV.

An application of all our directions on this head to the island of Jamaica. Instances of their salutary effects.

WE shall now collect the whole of our directions, by an application of them to the island of Jamaica.

Jamaica has one continued ridge of mountains running through it, from east to west,

weſt, beſides ſome ſmaller hills. On the ſides of thoſe mountains the air is temperate and cool, while the vallies are ſcorched up with exceſſive heat, or covered with violent rains. Part of this mountainous ridge is at no great diſtance from Spaniſh Town, the capital, nor from Kingſton, or Port-royal, the principal ſea-port.

It appears from what has been ſaid, of the healthy quality of the air on the mountains in the torrid zone, that if choſen ſpots of ground on thoſe mountains were ſet apart, ſome for the receſs of families in health, and others for the reception of the ſick, the moſt beneficial conſequences would thence reſult to all the white inhabitants of that iſland.

We do not recommend a retreat to the barren, cold and bleak ſummits of the Blue mountains; where the ſudden tranſition from the ſcorching heats in the vallies or woods, to ſo intenſe a degree of cold, muſt be injurious to the conſtitution: nor to ſuch an heighth, as where the vapours are condenſed into miſts or clouds.

But

But we recommend the moving into a more temperate and pleaſant ſituation: where the heat of the day ſeldom exceeds 70 degrees on Farenheit's thermometer, and the cold of the night is not under 54 degrees on the ſame ſcale: where the ground is altogether cleared from wood, and has no ſtagnating water above or near its ſurface: where the ſoil is rich, fertile, and favourable to the cultivation of European plants, and to the health of European animals: and laſtly, where ſheep brought from England ſtill retain, without any inconvenience, their fleecy covering.

There are large flat ſpots of ground in thoſe mountains, which, by induſtry and cultivation, might be converted into the moſt healthy and delightful rural retirements. In ſuch places on thoſe hills, where at preſent the chillneſs of the evening renders a fire comfortable, and requiſite to an European conſtitution, the improvement of the ſoil would gradually mend the quality of the air.

Governors, newly arrived at Jamaica, of whom many have died ſoon after their

landing, or any gentleman who can afford to keep a horſe or carriage, after doing buſineſs at Spaniſh Town or Kingſton, might, before ſun-ſet, return to ſuch a healthy and pleaſant country ſeat as is here recommended; taking the precaution of never ſleeping elſewhere during a ſickly ſeaſon.

But without reſpect to a governor, or any other particular perſon, if we conſider this propoſition in a more extenſive point of view, and the benefit ariſing from it, in preſerving a multitude of lives, the greatneſs of the object demands the moſt ſerious attention. Though the iſland of Jamaica is at preſent much healthier than formerly, yet in certain months of the year it is infeſted with fevers and fluxes; and in ſome years thoſe diſeaſes prove epidemical and very fatal. It will likewiſe be found, that the moſt certain means of preſerving ſuch a number of Europeans as frequent that iſland, nay, their only ſecurity conſiſts in this—That thoſe whoſe circumſtances and buſineſs will permit, ſhould retire, eſpecially during the night ſeaſon, to ſuch places for health, until they are ſeaſoned to the

 climate;

climate; and that others, who cannot afford this precaution, be immediately removed thither when taken ill.

The ſick at Kingſton or Port-royal may be carried in an eaſy and commodious vehicle, ſix or ſeven miles to the hills in the pariſh of Leoganie; or they may have the benefit of water carriage to Port Paſſage, and from thence be conveyed to the hills near Spaniſh Town, when proper houſes are built for their accommodation in that cool and wholeſome air.

It is certain, that a perſon afflicted with a fever or flux will be much leſs endangered by being conveyed 20 miles on his bed, in a proper carriage, than by continuing 20 hours in the air which produced his diſtemper.

The immediate removal of the patient in ſuch caſes into another air, often abates the moſt alarming ſymptoms of the diſeaſe, and that even in a few hours time.

When the Lion, Spence, and ſome other ſhips of war, were employed at Port An-

tonio, in the iſland of Jamaica, in clearing Navy-Iſland of wood, in order to build wharfs and ſtore-houſes in that place, many of the men, when cutting down the wood, were ſeized at once with a fever and delirium. This phrenſy attacked a man ſo ſuddenly, and with ſo much fury, that with his hatchet, if not prevented, he would have cut to pieces the perſons who ſtood near bim. Orders were iſſued, that as ſoon as the men were thus ſeized, they ſhould be bled, and immediately ſent on board their reſpective ſhips. The conſequence was, that all who were carried on board quickly recovered; whereas thoſe who remained on ſhore, either died, or ſuffered a dangerous fit of ſickneſs.

During the laſt war, it was no uncommon thing for ſix or eight of the centinels who were poſted in the marſh where Greenwich hoſpital in Jamaica ſtands, to be taken ill in one night, with copious vomitings or purgings, a delirium, and all the alarming ſymptoms of a violent fever; of which they recovered in ſome hours after they were removed to Kingſton.

But ſhould a change into a purer air not produce ſuch immediate effects, it will at leaſt mitigate the ſymptoms of the fever: the uſe of medicines will be attended with more ſucceſs; the patient will recover ſooner, and will more ſpeedily regain a vigorous ſtate of health.

I ſhall here inſert an obſervation, communicated to me by a very ſenſible man, who reſided long in Jamaica.

" I have often obſerved the poor ſeamen
" in the merchant-ſervice to recover from
" the yellow fever, ſolely by having the
" benefit of a free and conſtant admiſſion of
" the cool ſea air into a ſhip anchored at a
" diſtance from the ſhore, where they lay
" utterly deſtitute of every aſſiſtance in ſick-
" neſs, and even of common neceſſaries,
" having nothing but cold water to drink,
" and not ſo much as a bed to lie upon;
" while gentlemen newly arrived from
" England, by being ſhut up in ſmall, cloſe,
" ſuffocating chambers at Kingſton or Port-
" royal, expired with the whole maſs of
" their blood diſſolved, flowing from every

" pore; the ſtifling heat of their room " having produced a ſtate of univerſal " putrefaction in the body even before " death."

What I have here ſaid of Jamaica is applicable to every unhealthy ſpot of ground, and to all our iſlands and plantations, both in the Eaſt and Weſt Indies.

SECT. V.

Objections anſwered. Dreadful and fatal effects of remaining all night in unhealthy places. Sickneſs ariſing from that circumſtance, vulgarly aſcribed to ridiculous cauſes. Meaſures beneficial in all endemical, and annual epidemical diſtempers.

IN oppoſition to what has been ſaid, it may be urged,—That in ſeveral places which I have mentioned, as ſecure refuges from ſickneſs, there are inſtances of thoſe who reſide in them being ſeized with the endemical diſeaſes of the adjacent country. The yellow fever may ſeize an officer or ſoldier in the garriſon of Monk's Hill in Antigua.—

But inferences drawn from a few uncommon and extraordinary caſes, cannot fairly be admitted againſt general obſervation and experience. Such caſes have ſometimes occurred even in England; where, in a long courſe of practice, I have ſeen the

tetanus, emprosthotonos, and opisthotonos, in as violent a degree as occur under the torrid zone: as also the dry belly-ach, the black vomit, and the hepatitis, together with the locked jaw; all which are diseases in a manner peculiar to sultry climates. I may therefore justly adhere to the principles already laid down in several parts of this and my former writings, where the danger of sleeping in unwholesome places has been frequently represented.

Unless the garrison of Monk's Hill had been apprised of this danger, and had cautiously avoided it, the question cannot be fully determined, Whether persons who never slept out of Monk's Hill, will be attacked with the endemical diseases of the adjacent country? It is my opinion they seldom or never would.

I mentionedthis affair to a person who resided long at English Harbour in Antigua, who informed me, that he had known some of the garrison on Monk's Hill to have had the yellow fever. I desired he would be pleased to recollect the circumstances of

their

their being taken ill, and whether they had ſlept any nights preceding their illneſs in the low grounds, or in Engliſh Harbour: upon which it immediately occurred to him that when he himſelf was ſeized with the yellow fever, there were at the ſame time two officers belonging to the garriſon at Monk's Hill labouring under it, who were ſeized early in a morning with the ſame fever, after ſleeping the two preceding nights at Engliſh Harbour. Upon beginning to conſider the great danger of ſleeping in unhealthy places, (with which he was before entirely unacquainted) he recollected, that moſt of the people in Monk's Hill who had been ſeized with this fever, were taken ill after ſleeping on the low grounds; it being a common cuſtom among the officers of that garriſon to ſleep in the houſe at Engliſh Harbour where they dined and ſupped.

If perſons will run the hazard of their health and life, by remaining all night, or ſleeping in unhealthy places, they cannot expect to reap the benefit of ſafety and ſecurity from a healthy air in their neighbourhood. To what I have already ſaid on this ſubject,

ſubject, I ſhall here add ſome inſtances of the melancholy effects of inattention to this important advice of never ſleeping in unhealthy places; and I hope that they will ſerve further to prove the utility, and to inforce the obſervation of theſe directions which we have recommended to all Europans for their preſervation in foreign climates.

In the year 1766, ſixteen French proteſtant families, conſiſting of ſixty perſons, were ſent, at the expence of the Engliſh government, to Weſt Florida. The ground allotted for their reſidence was on the ſide of a hill, ſurrounded with marſhes, at the mouth of the river Scambia. Theſe new planters arrived in winter, and continued perfectly healthy until the ſickly months, which in that country are thoſe of July and Auguſt. About this time eight gentlemen (from one of whom I received this account) went to this new ſettlement to ſolicit votes, for the election of a repreſentative in the general aſſembly of that province; where, by remaining but one night, every one of them was ſeized with a violent intermitting fever, of which the candidate for being the repre-

repreſentative, and another of their number, died. The next day ſeven gentlemen came upon the ſame buſineſs to this unhealthy ſpot of ground; but by leaving it before night, they had the good fortune to eſcape this ſickneſs, and did all continue in perfect health.

During the months of July and Auguſt 1766, the annual fever of that climate proved ſo fatal to thoſe French ſettlers on that unwholeſome ſpot, that of ſixty perſons, fourteen only ſurvived it; and even thoſe who remained alive, in the September and October following, were all in a very ill ſtate of health, not one of them having eſcaped the attack of the fever, and moſt of them dying within a few months afterwards.

In a voyage to the coaſt of Guinea, performed in the year 1766, by the Phœnix ſhip of war, of 40 guns, the officers and ſhip's company were perfectly healthy, till, on their return home, they touched at the iſland of St. Thomas. Here the captain unfortunately went on ſhore, to ſpend a few

few days in a houſe belonging to the Portugueſe governor of that iſland. This happened during the rainy or ſickly ſeaſon. In the ſame houſe were lodged the captain's brother, the ſurgeon of the ſhip, ſome midſhipmen, and the captain's ſervants. But, in a few days after their being on ſhore, the captain, his brother, the ſurgeon, and every one, to the number of ſeven, who had ſlept in that houſe, were taken ill; and all of them died, except one, who returned to England in a very ill ſtate of health. The ſhip lay at anchor there 27 days; during which time three midſhipmen, five men and a boy, remained on ſhore for twelve nights, to guard the water caſks, under pretence that the iſlanders would ſteal them; all of whom were likewiſe taken ill, and two of them only eſcaped with life. At that iſland, only thoſe who ſlept on ſhore were taken ill, and no other man of the ſhip's company was ſeized with any diſtemper during their ſtay there, or during the whole voyage. If we except theſe unfortunate perſons, only one man died through the whole of that time, and he was killed by an accidental blow upon the head.

None of thoſe who ſlept on ſhore eſcaped the ſickneſs; and of them only three ſurvived it; one midſhipman, who has ever ſince been in a cachectic ſtate, for which he was a patient in Haſlar hoſpital; a ſeaman, in the ſame condition, who has been twice under my care; and a molattoe, one of the captain's cooks, who had ſlept in the ſame houſe with his maſter, and who not being able to regain a good ſtate of health in England, is now returned to Guinea, under a notion that he was poiſoned there, and can only be cured by medicines adminiſtered by the negroes; this being a prevalent vulgar opinion among the common ſeamen, who have ſuffered in their health and conſtitution in that part of the world.

The ſickneſs in this iſland began much about the time that the Phœnix arrived; and the governor had then taken his uſual precaution at ſuch ſeaſons of the year, of retiring into the higheſt apartments of his houſe, where he lived ſhut up from the acceſs of the external air, and from company.

Whilſt

Whilſt the Phœnix continued in this place, 20 or 30 of her men went daily on ſhore; ſome rambled about the iſland, hunting and ſhooting; others were buſy in bartering for proviſions, waſhing linnen, and other neceſſary employments: ſo that almoſt all that ſhip's company, conſiſting of 280 men, were, in their turns, aſhore upon the iſland in the day-time; not one of whom, who returned to the ſhip at night, was taken ill, or ſuffered even the ſlighteſt indiſpoſition.

Let all thoſe who are apt, upon all ſuch occaſions, to attribute theſe accidents to the irregularities of the ſufferers, conſider how little probable it is that thoſe few who remained all night on ſhore could have been guilty of greater exceſſes, or have committed more hurtful irregularities, than the whole of the ſhip's company, and likewiſe many from another ſhip, the Hound, then in company, of whom the greater part was aſhore in the day-time. I muſt likewiſe obſerve, that the ſprings of water in this iſland are remarkably pure and wholeſome; and though it lies directly under the equinoctial line,

line, there is perhaps no ſpot of ground in the world more abundantly fruitful, or more pleaſant and delightful.

The common opinion, that thoſe people who ſleep on ſhore in ſuch places, are poiſoned by the negroes, is ſo fooliſh and ridiculous, that it hardly deſerves notice. If this is true, the negroes muſt only be poſſeſſed of that poiſon which communicates the endemic diſeaſe of the country, a fever, with its common conſequences, a dropſy, jaundice, or cachexy; for ſuch have I always found the condition of thoſe people who ſuppoſed themſelves to have received it.

Here I cannot help lamenting the untimely fate of thoſe gentlemen, with ſeveral of whom I was well acquainted, who were thus, by an imprudent and fatal conduct, cut off in the flower of their age, and who, by continuing on board their ſhip, would in all probability have returned to England in perfect health. This was the caſe of all the officers and men belonging to his Majeſty's ſloop the Hound; who having performed the ſame voyage on this coaſt, arrived

rived at St. Thomas before the departure of the Phœnix from thence. They, by taking the precaution of having the ſhip quickly provided with wood and water, without permitting any of the men to remain on ſhore in the night, arrived at Spithead in perfect health; not one of them having been ſeized with that fatal ſickneſs in the iſland of St. Thomas, which cut off the captain, and ſo many of the gentlemen and ſeamen belonging to the Phœnix.

In the year following, this ſhip made another voyage to the coaſt of Guinea, and happened again to touch at this iſland in the ſickly ſeaſon, where ſhe loſt eight men out of ten, who had imprudently remained all night on ſhore. At the ſame time, the reſt of the ſhip's company continued in perfect health, who after ſpending the greateſt part of the day on ſhore, always returned to their ſhip before night. On board the Hound ſloop, then in company with her, only one man died during the whole voyage, the officers having been particularly careful not to permit any of the people to continue all night on ſhore in that place.

This

This man was cut off by an obſtinate intermitting fever with which he had been firſt ſeized at Sheerneſs.

It may be urged, that there are frequent inſtances of perſons labouring under the prevailing ſickneſs of a country, who have been carried on board ſhip, or into a better air, where the fever ſtill continued, without any mitigation of its ſymptoms, and at laſt proved mortal. But let that be remembered, which we have particularly recommended, the immediate removal of the patient upon the firſt attack of his illneſs; that is, in leſs than 24 hours after being ſeized with it.

I am ſenſible that the attack of a cholera morbus, a dyſentery, or even of the black vomit, may be ſo ſudden and violent, as to admit of but ſmall hopes of a recovery, from a change of air; but it muſt be allowed, that ſuch violent and dangerous attacks of theſe diſeaſes are, at the worſt, but ſingular and uncommon. The want of ſucceſs, from the too late application of a remedy, or its failure in a few caſes, cannot

with propriety be objected againſt its efficacy. In Jamaica and other places, perſons recovering from fevers are ſent to the mountains, for the re-eſtabliſhment of their health. There they no ſooner begin to breathe the cool, refreſhing, and pleaſant air of the hills, than their debility, and all the complaints proceeding from it, almoſt immediately leave them.

When a weakly European factor leaves the coaſt of Guinea, he no ſooner breathes the pure ſea air, untainted with the land effluvia, than he finds his health mended, his appetite and his ſtrength improved.

The change of air, in both theſe caſes, proves the moſt certain means for the perfect re-eſtabliſhment of health; notwithſtanding ſome whoſe conſtitutions have been quite impaired by the long or repeated attacks of ſickneſs in a bad air, or, by the violence of their diſorders, die at ſea, or in the wholeſome air of the hills.

Theſe are certain facts, and a little cool reflection upon them will ſerve to eſtabliſh

it

it as a general and univerſal practice, in all epidemical diſeaſes proceeding from a bad air, immediately to remove the patient into a more pure and wholeſome atmoſphere. This will be found of great benefit, not only in thoſe diſeaſes which proceed from ſuch apparent ill qualities of the air as have been ſo often mentioned in theſe ſheets, but in all endemical diſeaſes, whoſe rage is confined to a particular ſpot. An univerſal and general ſickneſs may moſt certainly be produced by ſome latent intemperature of the atmoſphere, the ſources of which cannot be traced; neither is it always eaſy, from the ſenſible alterations in the air, as to heat, cold, moiſture, or ſuch appearances as manifeſtly affect the human body, to account for the greater violence of endemic diſeaſes in ſome ſeaſons than in others: ſuch a difference in the air cannot always be aſcertained, as would ſeem adequate to the production of ſuch violent and obſtinate diſeaſes, or of their longer duration in one ſeaſon than in another.

Thus during the years 1765 and 1766, remitting and intermitting fevers were more

frequent in ſome parts of Hampſhire, than they had been remembered for many years paſt: they continued to make freſh attacks even in the cold month of December; inſomuch that at Chriſtmas 1766, I had no leſs than 100 patients, labouring under agues and fevers. In the years 1767 and 1768, without any apparent cauſe, they became much leſs frequent than in the preceding years; and, in the years 1769 and 1770, they ſeldom occurred even in the worſt ſituations. But whatever were the latent cauſes of thoſe unuſual fevers at that time, they were evidently confined to ſome particular ſpots of ground, and to particular houſes and ſituations; and the removal of the patients into a better air did then prove uſeful, as undoubtedly in parallel caſes it always will.

I will conclude with obſerving, that in a period of eight or ten years, a violent epidemical ſickneſs breaks out among our factors and coloniſts, in ſeveral places in the torrid zone. This was the caſe at Antigua in the years 1765 and 1766, where the fever raged with ſuch violence, as to cut off almoſt

almoſt a ſixth-part of the white inhabitants of that iſland. If this fever was not contagious, and only the uſual and annual epidemic of the iſland, raging with its utmoſt violence; as was that in Hampſhire during the ſame years; to me it ſeems highly probable, that if the ſick, when firſt taken ill, had been removed into the air of Monk's Hill, many would have been alive, who are now no more.

But the facts, which are here barely ſet down, I leave to ſpeak for themſelves. The advice, or inferences, are of ſuch obvious importance, of ſuch extenſive utility, and ſo practicable, that one would think nothing more was requiſite to inforce their execution in all parts of the world.

SECT. VI.

Unhealthy ſettlements to be maintained by the naturalization of the natives. Military eſtabliſhments in ſuch places to be recruited by criminals. Great mortality among the ſoldiers in ſuch ſettlements. Means of preſerving ſuch as are ſent to India.

I Will here add ſome few inſtructions with regard to the more unhealthy ſettlements on the coaſt of Guinea. There ſome of the young natives ſhould be educated and inſtructed in thoſe branches of knowledge which may qualify them for acting as factors or merchants in the moſt unhealthy ſettlements.

Uncommon application, or great abilities in commerce, much induſtry, and perfect integrity, may be properly rewarded. Thoſe who poſſeſs ſuch virtues ſhould be diſtinguiſhed by particular privileges or honours; they ſhould be naturalized; ſhould be al-

lowed

lowed to riſe to a certain rank in the government or army; and they ſhould be intitled to the other privileges of Britiſh ſubjects.

At Benguela, Catcheou, and other unhealthy places of Guinea, few Portugueſe of the white colour are to be met with, except prieſts, and ſuch as are baniſhed to that quarter of the world. The Portugueſe have ſo inſtructed and civilized many of the blacks and molattoes in their African ſettlements, that beſides prieſts of a dark complexion, who are often men of letters, well verſed in the Latin, Greek, and French languages, they have their principal factors, and many rich merchants, lawyers, ſurgeons, and others, of the ſame colour: all of theſe prove as faithful, and good ſubjects to the crown of Portugal as any in Liſbon.

It is remarkable that the moſt healthy part on that coaſt remains at this day unpoſſeſſed by any European nation; I mean the Banana iſlands: theſe lie at a ſmall diſtance from Sierra Leon: and according to

the accounts I have had of the healthy temperature of the air, which would ſtill be improved by cultivation, it is probable, that ſhould the head-quarters of our military eſtabliſhments in Senegal and Gambia be removed into theſe iſlands; if they were alſo made a privileged center of commerce, and a ſtorehouſe for trade; the Engliſh might with tolerable ſafety reſide in them during all the ſeaſons of the year.

In this caſe, all the other ſettlements and out-poſts of the army might with ſafety be viſited by the proper officers, and the merchants, during the dry ſeaſon of the year.

In order to recruit unhealthy military poſts, where it may be requiſite to keep ſoldiers through the whole year, it might perhaps be thought adviſeable that criminals be condemned to ſerve there for life, or for a limited term of years; and the puniſhment of deſertion in the army might in ſome caſes be converted into that of baniſhment to thoſe ſettlements.

It

It is said the King of Prussia seldom puts a soldier to death; but, according to the nature of the crime, condemns him, for a longer or shorter time, to work upon the fortifications, and thus renders him still an useful subject.

If the English were thus to send deserters and criminals to the unhealthy places on that coast, it would perhaps tend to preserve a number of useful subjects, and render such lives as are forfeited by law still beneficial to their country. It might perhaps serve likewise to wipe off the aspersion of foreigners, which we hope is unjust, that there are often more people executed in England in one year, than on the whole continent of Europe.

It is a melancholy, but a certain truth, that the maintenance of a military establishment at Senegal for three years during the last war, was attended with an annual loss of above a thousand lives; and since the late re-establishment of a military government there, the mortality has been very considerable. Many of the officers and soldiers who

who lately embarked for that part of the world, are now dead; and the preſent governor, with the poor remains of his corps, may be ſaid to have lived to this time chiefly by repeated doſes of the Peruvian bark.

The Spaniards ſeldom ſend regiments to barren and unwholeſome places. Such they generally garriſon with exiles. I have been informed that the annual loſs ſuſtained by the Dutch troops at Batavia is chiefly ſupplied by a number of idle and diſorderly perſons, picked up or trepanned in the ſtreets of Amſterdam, eſpecially foreigners, and deſerters from different nations. Theſe recruits yearly embarking in the Dutch Eaſt India ſhips, are a mixed company of different European nations, and not like the Engliſh regiments, conſiſting chiefly of Britiſh ſubjects, and many of theſe our ingenious mechanics and moſt uſeful tradeſmen.

I cannot help further obſerving, that the warm woollen clothes, and the black hat, which conſtitute the regimental dreſs of an Engliſh

Engliſh ſoldier, are altogether improper in hot climates; as in thoſe countries, ſoldiers, during fatiguing marches, while ſweating under the oppreſſive load of arms and warm clothing, are apt, in the heat of the day, to be ſuddenly ſeized with a ſpecies of apoplexy, occaſioned by the ſcorching beams of the ſun darted on the head, and abſorbed by the blackneſs of the hat; to prevent which, a white covering for that ſeems requiſite. To recover the patient from this fit, immediate bleeding is abſolutely requiſite; notwithſtanding which, many die, and others remain deprived of their ſenſes ever afterwards.

It may not be improper to ſubjoin a few directions for the preſervation of the numerous ſubjects of Great Britain, particularly the ſoldiers, who are yearly ſent to India.

As moſt of the ſhips, who perform this voyage, are either newly built, or have been for ſome months unemployed, without fires or people on board, they become unwholeſome to the men. It would therefore

fore ſeem neceſſary in Eaſt India ſhips, before they are fitted out, to keep conſtant fires of dried wood for ſix or eight hours every day, during a fortnight or three weeks. To evince the propriety of this advice, if, by way of experiment, a fire be made on the ballaſt; and the hatches ſhut, the ſmoke, which iſſues from the crevices, will be found to have an intolerable ſtench, proceeding entirely from the unwholeſome dampneſs of the timbers.

To prevent infection, every recruit or ſoldier, when firſt ſent on board, ſhould be ſtripped of his old clothes or rags, before he is permitted to go between decks.

During ſo long a voyage a ſufficient ſtock of clothes, with changes of linnen, and particularly a good bed, are abſolutely neceſſary. It is obſerved, that when a number of ſuch people are ſent on board a ſhip, ſuch of them as, not having a bed to lie upon, are obliged to ſleep in their dirty clothes and linnen on the decks or on cheſts, will be ſeized with frequent chills, reſembling the fit of an ague, and afterwards have

have a head-ach, great thirſt, and heat on the ſkin, which may be attended with a cough, pains of the limbs, or other accidental ſymptoms.

Theſe are the firſt appearances of that infectious fever, which often, in a greater or leſſer degree, annoys ſhips crouded with ſoldiers. Some will become yellow, others have ſpots on their body; but the head being greatly affected with a low fever, clearly evinces the nature of their diſeaſe.

As nothing will more effectually prevent this infection, than a ſufficient ſtock of good clothes and bedding for each man on board; ſo, on the other hand, nothing will abate its progreſs ſo much as carrying out a ſupernumerary quantity of beds, linnen, and clothes, for ſhifting the men. On the firſt appearance of this fever, and of the head being affected, the application of a bliſter almoſt certainly removes it; but from filth and dirt, the moſt efficacious remedies will be rendered ineffectual.

We have further to recommend, in behalf of the soldiers and sailors in East India ships, the same supply of necessaries for the sick, as is granted in the royal navy. A man in a fever cannot live on biscuit and salt beef. Barley, rice, currants, sago, sugar, spices, and even wine, seem essentially requisite for the perfect re-establishment of his health.

If ships, in their passage to India, touch at the islands of St. Jago, Madagascar, St. Johanna, or Mohilla, or at Culpee on the River Hughly, those persons who go ashore should always return before night, as these places have proved particularly fatal to Europeans who sleep on shore, at particular months of the year: and, in all unhealthy places, when the ship lies near the land, for the preservation of the whole company, a fire should be kept burning on the fore-castle all night, and the ship have her awnings spread in such a manner, that the influence of the fire and smoke may extend themselves over the whole ship. For further directions on this head, see my Essay on preserving seamen.

If

If the soldiers be landed at Calcutta, they may be first stationed on the high grounds in its neighbourhood, until seasoned to the country.

But if the men have been very sickly during the voyage, it is advisable to keep them separate, for some time, from other persons, till perfectly recovered, and free from infection: a precaution we would recommend to all our factories abroad, from a neglect of which several of our colonies have suffered.

END OF PART II.

ADVICE

ADVICE
TO
EUROPEANS.

PART III.

CHAP. I.

Directions for the cure of thoſe diſeaſes which attack ſtrangers in warm climates.

SECT. I.

Fevers.

IN addition to what is ſaid in the Appendix to the Eſſay on preſerving ſeamen, and to the forms of medicines preſcribed in the ſecond edition of that work, I ſhall here ſubjoin ſome further directions and preſcrip-

 tions

tions, for the benefit of thoſe who reſide in warm climates. It is to be obſerved, that when a perſon, upon his firſt arrival in the Weſt Indies, or in any other country between the tropics, is attacked with a fever, no phyſician can tell what ſymptoms will occur in its progreſs, or whether it will terminate by diſcharges of bile, by a jaundice, or by ſymptoms of a malignant nature.

Therefore, when an European is taken ill of a fever, during a ſeaſon of prevailing ſickneſs in thoſe countries, it is neceſſary to endeavour, by the moſt efficacious means, to bring it as ſoon as poſſible to a remiſſion, that the bark may be adminiſtered without delay. With this view he is to conſider how far the violence of the fever in its firſt attack will admit of bleeding*: a few ounces of blood taken from the foot have ſometimes been found to relieve the pain of the head: but he muſt remember that this operation is in general to be uſed with great caution, and the repetition of it with ſtill greater, in thoſe climates.

* See Appendix, p. 127, &c. to the Eſſay.

The chief objects of attention in all ſuch fevers, are the contents of the ſtomach and inteſtines. Upon the patient's firſt complaint, and during the firſt hours of the fever, while perhaps he is only chilly, or complains of alternate fits of heat and cold, the ſtomach and inteſtines ſhould be immediately cleanſed, either by a vomit, a purge of manna with tincture of ſenna, or by an oily and purging clyſter: after which the patient, eſpecially if the ſkin be moiſt, may immediately take an antimonial draught * every ſix hours. It is to be obſerved, that according to the ſtate of the ſtomach, the doſe of this, or of other antimonial medicines, is to be increaſed or diminiſhed; taking care that they do neither irritate or offend the ſtomach: to prevent which, eſpecially if there be a tendency to reaching

* Recipe Salis cornu cervi ſemi ſcrupulum, ſucci limonum drachmas tres, vel q. s. ad ſaturationem, aquæ menthæ vulgaris ſimplicis drachmas decem, tincturæ ſtomachicæ drachmam unam, vini antimonialis guttas x. ad xl. (vel potius in vicem vini antimonialis, tartari emetici quartam partem grani) ſyrupi è corticibus aurantiorum, drachmam unam, miſceantur.

or vomiting, a few drops of tinctura thebaica muſt be added to each draught, or if violent, the antimonial may be omitted, and the opiate be given in a full doſe. If the volatile alcali, though combined with the juice of lemons, ſhould be thought to decompoſe the antimonial preparation, the vinum antimoniale, or rather the tartarum emeticum, in ſmall doſes, may be adminiſtered, without the mixture of an acid or alcali in the preſcription.

If the antimonial medicines, after thoroughly cleanſing the bowels, produce a ſweat, the patient will probably have an intermiſſion of the fever, or at leaſt a mitigation of its ſymptoms, in 24 hours; when the bark, if no ſymptom forbids, is immediately to be given. The next day a return of the fever is to be expected, if a ſufficient quantity of bark has not been taken. In this caſe the antimonial medicines are to be repeated, during the continuance of the fever; or if the head-ach be violent, and the patient threatened either with a delirium or coma, a bliſter ſhould be applied to

the back, and recourſe muſt be again had to the bark, as ſoon as the fever leaves the patient; to which, if he is much weakened by the preceding fits, ſome ſnake-root or camphire may be added.

If the antimonial medicines have not cauſed plentiful diſcharges by ſtool, as they often do, a purge * may be given occaſionally, in the abſence of the fever; copious bilious ſtools proving frequently critical and ſalutary.

Theſe are the moſt proper methods of treating Europeans, upon the firſt attack of this fever in the Weſt Indies, that a perfect intermiſſion, the moſt deſirable criſis, being by this means obtained, the bark may be ſafely and plentifully adminiſtered.

But on the other hand, if the patient, upon being firſt ſeized, makes no complaint

* Recipe Corticis peruviani parùm contuſi ſeſquidrachmam, aquæ libram unam, coquantur ad colaturæ uncias tres, in quâ ſolve ſalis cathartici amari drachmas ſex, tincturæ corticis peruviani ſimplicis drachmas tres.

of his indiſpoſition; if, as is too often the caſe, he ſuppoſes his illneſs ſolely the effects of drunkenneſs, of debauchery, or any intemperance, of hard labour or violent exerciſe, when expoſed to the heat of the ſun; and, from aſcribing it to ſuch cauſes, if he for ſome days neglects to make his condition known to the phyſician or ſurgeon, and a yellow colour ſhews itſelf in the eyes, his caſe is already become extremely dangerous.

The anxietas febrilis, or a great oppreſſion, with the ſenſation of heat and pain at the pit of the ſtomach, come on, and frequently precede copious diſcharges of bile, by vomit or by ſtool: they are alſo the forerunners of a jaundice. Sometimes the region of the liver becomes ſwelled, hard and painful. Strong and conſtant convulſions of the diaphragm, intercoſtal muſcles and ſtomach, follow theſe ſymptoms, and are accompanied with a vomiting of green offenſive bile, and afterwards of black diſſolved blood, reſembling the grounds of coffee, which is ſucceeded by bleeding at different

different parts of the body, a phrenzy, an universſal gangrene, and death *.

As

* The following is an account of this diſeaſe, in the original, given by Doctor Bruce, an eminent phyſician, and native of the iſland of Barbadoes.

Febris putrida, apud Noſtrates dicta flava, quoniam plerumque ſub finem morbi, cutis flavedine ſuffunditur; ab Hiſpanis Vomito preto, et a Gallis Maladie de Siam varie nominatur. Advenas ex climate temperato in Indiam utramque corripit, et eos, qui poſt labores diuturnos et exercitium vehemens, ſub ſolis ardoribus ſe roribus nocturnis exponunt: adjecto præſertim liquorum, ut dicunt ſpirituoſorum abuſu. . . . In omni anni tempeſtate, ſeſe offert hic morbus; ſymptomata autem graviora obſervantur, ubi calor magnus cum multa humiditate conjungitur.

Incipiens dignoſcitur languore, dein nauſea quadam, et vertigine; paulo poſt accedunt algor et horripulatio, perraro tamen rigor: quos excipiunt ardor vehemens, et intenſa febris cum ſummo capitis et lumborum dolore: rubet os totum, ardentque oculi; quæ ſigna, adjecta anxietate et præcordiorum oppreſſione, pathognomonica dicuntur. Pulſus adeſt velox, altus, quandoque pulſitans, ſed mollis; in quibuſdam velociſſimus, et plenus, cum reſpirandi difficultate. Cutis aliquando ſicca eſt, in primis præſertim morbi diebus, ſed frequenter magis rorida. Sanguis etiam ingruenti morbo miſſus, colorem exhibit floridum, rutilum, et quaſi rarefactum,

As to the prognoſtics, if a jaundice makes its appearance ſoon, it is a bad ſymptom: livid

factum, craſſamento vix cohærente, ſero luteo croceo: flaveſcit urina. Somnus parvus eſt abſque levamine; jactatio frequens. Sitis in quibuſdam ſumma eſt, vix adeo in aliis magna. Lingua in principio muco albeſcenti obducta, ſqualeſcit circa finem morbi, et in media ſcabra, coloris primum rufi dein quaſi nigreſcentis horrida apparet. Perſiſtunt hæc ad diem tertium, aliquando quartum et ulterius. Cum vero cauſæ antecedentes acerrimæ ſint, labefactuntur ægri vires, et intra viginti quatuor horas, vel citius moritur. Quo citius his, primus abſolvitur gradus, eo malignior ſolet eſſe morbus.

Tertiam vel quartam circiter diem deficit pulſus, fitque lentus, etiam ſolito magis, adeo ut abſenti inſuper cutis ardore, omnia in vado eſſe jactent indocti; falſa tamen ſpe tenentur, nam cito poſt omnia in pejus ruunt. Invadit coma, cum deliriis interruptis; vomitus porraceus, ſudor gelidus, et deliquia; oculorum rubor in colorem fuſcum mutatus, ad flavum accedit; ſic et circa os, tempora, collum, dein per totum corpus flavedo hæcce diffunditur: mali ominis ſigna; ecce enim coma altum, pulſus vermicularis, et intermittens, hœmorrhagiæ, reſpirandi ſumma difficultas, jactatio perpetua, ſubſultus tendinum, extremorum frigus, convulſio, mors . . . . . Obſervatu dignum eſt, hanc cutis flavedinem in quibuſdam obrepiſſe poſt ſeptimam et ultra diem; tumque vix adeo mali ominis eſſe . . . . Hœmorrhagiæ variis e corpore locis proveniunt; e naribus

livid ſpots, which ſometimes ſhew themſelves, portend death: if the ſkin continues very

ribus ſcilicet, ore, oculis, atque cutis poris; ſanguis per ſedes ejicitur, quaſi niger, ſic et vomitu. Urina icterica, nigreſcens; apparent notæ lividæ, et in membris gangrænæ. Poſt mortem corpus livet, juxta præſertim præcordia, quæ in principio ſedes eſſe morbi videbantur, hepar ſcilicit et ventriculus: in putredinem poſt hæc omnia rapiuntur.

Exſurgunt indicationes.

1mo, Ut magnus et rapidus fluidorum motus, cum febris violentia minuatur, in primo morbi gradu.

2do, Ut e corpore eluatur putrida quævis materia, ſic et putreſcens humorum diſpoſitio precaveatur, in omnibus morbi gradibus.

In incipiente igitur febre, quoniam plerumque pulſus velox et plenus ſit, mittatur ſanguis, pro ratione virium et ætatis: repetita perraro juvat miſſio. Si vero pulſus adſit debilis incipiente morbo, vix detrahendus eſt latex vitalis.

Cum ad ſecundam indicationem acceditur, caute procedendum eſt. Ventriculus enim inflammatus, vel ſumme irritabilis, ſæpe leniſſima ægre ſert medicamina: quare emetica minime exhibeantur, niſi perpetuam vomitionem inducere velis, et gangrænam: præterea morbi fomes in inteſtinis, ſive in hepate ad ductus biliarios

very dry and rough, the caſe is dangerous; and the longer it continues in this ſtate, the greater

arios inhæreſcens, multo magis feliciter catharticis lenioribus educitur. Æger, ſi adſtringatur alvus, quod in principio ſæpe ſit, eccoprotica ſtatim adeat, qualia ſint decoctum tamarindorum et chryſtalla tartari.

Si his non auſcultet venter, auxilio detur enema quoddam emolliens, et catharticum. Sæpe tamen cum eveniat in primis morbi diebus, ut quæcunque cathartica, quamvis leniſſima, ventriculo rejiciantur, fugiendum hoc in caſu ſemper eſt ad enemata fortiora, donec probe ſoluta ſit alvus: poſtea remanente adhuc nauſea, vel quidem auctis vomendi conatibus, præcipiatur extracti thebaici granum, vel grana duo, ſub pilulæ forma, hac ratione, uſu ſcilicet enematum et opiatorum, trucem hunc morbum, haud ſemel in praxi debellavimus.

Tertium circiter diem, labitur pulſus, &c. fortiter nunc robur eſt ſuſtinendum, medicamentis cardiacis, victuque idoneo, levi, et eupeptico.

Cortex Peruvianus magni foret hic uſus, niſi nauſeam moveret, vires tamen in quibuſdam experti ſumus, ubi aderant hœmorrhagiæ, et alia ſummæ putredinis indicia, ſed levis quidem in vomitus propenſio.

Camphora, quæ in febribus putridis, lentis, optimum remedium eſt, huic non multum opitulatur: plerumque

greater is the danger, as ſuch patients ſeldom recover, though the pulſe may give hopes, and

rumque enim nauſeam movet, quandoque tamen profuiſſe læti obſervavimus.

Radix ſerpentariæ virginianæ, valde antiſeptica eſt, et fere ſemper levaminis multum ventriculi ægritudinibus adferre ſolet; leve autem adſit infuſum.

Recipe radicis ſerpentariæ virginianæ drachmas duas, infunde in aquæ bullientis libra; colaturæ adde elixiris vitrioli quantum ſufficit ad gratam aciditatem, et dentur cochlearia duo vel tria ſæpiſſime. Infuſio huic immiſceatur vinum Maderenſe pro re nata.

Præſcriptis omnibus ad ventriculum roborandum fruſtra tentatis, ſpes ægri julepo ſequenti reſtoravimus.

Recipe aquæ menthæ ſimplicis, tincturæ ſtomachicæ partes æquales. Sumat cochlearia duo vel tria quaque hora vel ſemi-hora.

Perſiſtente adhuc nauſea, recurrendum abſque mora eſt ad extractum thebaicum (poſt ſedatum ventriculum exhibeatur enema catharticum) cui medicaminis generi ſeri ſemper hoc in morbo plurimum inſiſtendum eſt; ſic enim feliciter deorſum elicitur morbi fomes, atque materia feculina putreſcens; ventriculuſque levatus diætæ dein et medicinæ auſcultat.

Diæta

and the other ſymptoms alſo be flattering; for many have a good pulſe in this fever a few hours before death.

If

Diæta ſit levis, ex vegetabilibus antiſepticis deprompta; minime vero ex animalibus, quæ ad putredinem propius accedunt. Sit potus acidulus. Decocta, vel infuſa panis toſti in aqua, cum ſucco limonum vel tamarindorum juvant; adjecto ubi langueant vires vini pauxillo. In vinis primum locum tenent Maderenſe et Rhenanum. Hæc et potui eſculentiſque immiſta, parca ſimul copia ſed ſæpiſſime dentur.

In ultimis morbi diebus, cum ſumme langueant ægri vires, adſitque extremorum frigus, aliaque mali ominis indicia, augeantur adhuc medicamenta cardiaca.

Recipe radicis ſerpentariæ virginianæ drachmas duas, croci Anglicani ſemidrachmam, infunde in aquæ bullientis quantum ſufficit ad colaturæ uncias ſex. Adde vini Maderenſis unicas quatuor, tincturæ ſtomachicæ uncias duas, dein miſceantur. Capiat cochlearia duo vel tria ſingulis quibuſque horis. Huic pro re nata addantur confectio cardiaca, vinum croceum, camphora, tinctura corticis Peruviani.

Abſint, quæcunque ſanguinem ſolvunt, quamvis cardiaca dicta, quales ſunt ſales volatiles, et ſpiritus cornu cervi vel ammoniaci, neque extremis admoveantur epiſpaſtica, quia ſanguinem mire ſolvunt, hœmorrhagias atque gangrænam ferunt.

Præter

If the vomiting is conſtant, if what is thrown up turns to a dark colour, and the patient

Præter ſalutifera dicta, in quibuſdam opus eſt nervinis, ubi nimirum ex ſumma materiæ morboſæ acrimonia fit nervorum diſtentio, urgentque ſpaſmi, cum ſingultu, hoc in caſu, nulla, moſcho et caſtoreo cum opio, præſtantiora.

Sub finem morbi, prægreſſis diſſoluti ſanguinis notis, pacata poſtquam viſa fuiſſent ſymptomata graviora, vomitus quandoque ex inopino recrudeſcit; et miſeros diarrhœa bilioſa ſtipatos ad orci fauces pellit; quoſdam vero feliciter ſervatos novimus hac ratione.

Recipe corticis Peruviani contuſi ſemunciam, coque in aquæ fontanæ unciis duodecim, ſub finem coctionis adde radicis ſerpentariæ virginianæ, florum chamœmeli, ſingulorum, drachmas duas; fiant unciæ ſex colaturæ; cui adjiciantur balſami ſulphuris terebinthinati guttas quinquaginta, tincturæ thebaicæ guttas octoginta; gelatinæ amyli uncias duas; miſce, fiat enema ſtatim injiciendum, et diu retinendum.

Si vero enema antiſepticum et anodynum fortiter minus opituletur, præſcripta ſimul eſt in quibuſdam pilula ſequens.

Recipe extracti corticis Peruviani grana quatuor, camphoræ, extracti thebaici, ſingulorum granum unum. Miſceantur. Fiat pilula ſecundis vel tertiis quibuſque horis ſumenda, donec ſiſtantur paululum motus ventri-

culi

patient hiccups often, the caſe is almoſt deſperate. If the face be greatly fluſhed, and the veſſels of the tunica adnata become red, as in an opthalmia; and if this ſymptom is accompanied with a phrenzy, the patient will die in a very ſhort time, eſpecially if the ſkin be dry.

On the other hand, if the head continues unaffected, the pulſe becomes ſoft, the pains, anguiſh, and reaching be ſomewhat abated, by bleeding or other means; if the humours, which ſo violently irritated the ſtomach, be carried off by gentle purging, and if the ſkin becomes ſoft and moiſt; if the patient becomes compoſed, and is relieved from that oppreſſion of ſpirits which before diſtreſſed him, it is probable that he will recover——as all theſe appearances are ſalutary.

As to a criſis of the fever, it may happen in different ways, without any reſpect to the

culi et inteſtinorum . . . . Enematis ejuſdem et pilulæ vires, in dyſenteria putrida, adſtante jam ſphacelo, haud ſemel experti ſumus.

critical days enumerated by the ancients. It ſometimes happens by ſweat; but the moſt favourable and certain hopes of recovery, being the beſt termination of all fevers of this ſort, are from eruptions of ſmall boils on the ſurface of the body.

A diarrhœa proves alſo a favourable criſis. A bleeding from the noſe, or an artery, in the beginning of the fever, has ſometimes ſaved the patient's life. But hœmorrhages, when profuſe, or towards the end of the diſeaſe, are fatal. Buboes, and a ſwelling of the parotid glands, are unuſual, though ſalutary ſymptoms.

Would the potio frigida, ſo much recommended by the ancient phyſicians, and adminiſtered in fevers by many of the moderns in different parts of Europe, be ſerviceable in this diſeaſe?

In the neighbourhood of unwholeſome, damp, and woody places, during hot weather, a fever often makes its attack with a delirium.

delirium. In this caſe, after bleeding, if it has been indicated, antimonial medicines and bliſters are chiefly to be depended upon; together with the immediate removal of the ſick into another and purer air.

At the ſame time, ſal nitri may be given in large doſes well diluted; or if nauſeated by the patient, the ſpiritus nitri dulcis * will be found to ſit eaſy on the ſtomach, and the ſal nitri † may be adminiſtered in clyſters; the feet being frequently bathed or fomented with warm water, and ſinapiſms ‡ applied to them, if the caſe is obſtinate.

* Recipe Aq. alexiter. ſimpl. drach. vi. aq. alexiter. ſpir. drach. i. ſucci limon. (ſal. abſinth. ſaturat.) drach. iij. ſpir. nitri dulcis drach. i., ſyr. ſimpl. drach. ij. M. f. hauſtus quarta quaque hora ſumendus.

† Recipe Aq. hordeatæ unc. x. ſalis nitri ℥ß, albumen ovi unius M. fiat enema bis terve de die injiciendum.

‡ Recipe Farinæ avenæ vel tritic. Pulv. ſinap. ſingul. p. æ. aceti q. s. M. s. a., fiat cataplaſma pro pedibus.

In

In violent deliriums, eſpecially if attended with convulſive twitchings, muſk *, by itſelf, or with cinnabar, is proper. If there be worms in the ſtomach or inteſtines, 10 or 15 grains of calomel may ſafely be given; and towards the end of the fever, when a conſtant inquietude and long want of ſleep diſtreſs the patient, ſoporific medicines are beneficial.

Leeches applied to the temples, and cupping-glaſſes to the nape of the neck, have alſo proved ſerviceable.

* Recipe Moſchi gr. x. ad xv. ſacchar. alb. drach. i. terantur ſimul in mortario, dein adde mucilag. gum. Arabic. ſcrup. iv. aq. fontan. drach. xiv. aq. alexiter. ſpir. drach. ij. M. fiat hauſtus ſexta quaque hora ſumendus.

Recipe Cinnabaris gr. xij. confect. cardiac. q. s. fiat bolus ſextis horis ſumend. cum hauſtu moſchato ſuprapræſcripto.

Recipe Capit. papaver. alb. drach. vi. coquantur ex aq. font. lib. ij. ad dimidiam, addendo ſub finem coctura rad. ſerpent. virg. contus, rad. contrayerv. āā drach. ij. coletur liquor fortiter exprimendo, poſtquam refrixerit; et dentur unc. ij. omni quadrihorio additis nonnunquam elixir paregor. gutt. x.

In theſe fevers the cream of tartar, diſſolved in boiling water, makes an excellent cooling drink, to which manna and ſugar may be occaſionally added. If there appears a ſwelling of the parotid gland, the ſuppuration of it ſhould be promoted by poultices, and the patient's ſtrength ſupported by wine.

SECT. II.

*The Dyſentery and Cholera Morbus**.

THE flux is alſo a diſeaſe which uſually afflicts ſtrangers in thoſe climates. We indeed meet with few inſtances of an epidemical malignant fever, which is not accompanied in ſome patients with a flux. —The flux ſometimes appears by itſelf, often uſhers in the fever, but ſtill more fre-

* This diſeaſe in the Eaſt Indies, where it is very frequent and fatal, is called the Mordechin.

quently

quently accompanies it. In the firſt caſe, it is generally milder, and leſs mortal.

The diſtinction neceſſary to be made between fluxes in all climates is,—That thoſe which attack perſons in perfect health may be conſidered in the light of what phyſicians term original diſeaſes; but thoſe fluxes which attack perſons much weakened by a fever, and reduced to a very low condition of body, are properly ſymptomatic, as they proceed chiefly from the patient's debility and weakneſs, of which the flux is a certain proof.

When a violent dyſentery ſeizes a perſon in health during warm weather, I judge the following the moſt proper means of relief. —After bleeding with great caution, and giving a few grains of ipecacoanha, by way of a vomit, with an opiate after its operation, let a full doſe of ſal catharticum amarum be adminiſtered, in order to cleanſe the inteſtines; and afterwards let recourſe be had to ipecacoanha, in the ſmalleſt doſes, with opiates and rhubarb. Laſtly, when the pains in the bowels and fever are quite

gone, and the purging much abated, the cold bath will, in all hot countries, contribute greatly towards a perfect re-establishment of health.—Or, for the thorough cleansing of the intestines, at the beginning of this disease, especially if a fever accompanies it, an ounce of manna, and two grains of tartar emetic, may be dissolved in a pint of common emulsion, with the addition of half an ounce of syrup of white poppies. Of this mixture an ounce should be taken every hour, until the bowels are sufficiently emptied; after which an opiate is to be given, and then a mixture of the bark with opium will often complete the cure.

But if the dysentery be accompanied with violent reachings, or a severe vomiting, on its first attack, and the patient be threatened with a cholera morbus, other medicines must be prescribed. In the first place, the stomach must be evacuated of its contents, by the gentle stimulus of large draughts of a weak decoction of chamomile flowers, or with warm water, adding to it a few drops of spirit of hartshorn, to remove the cramps and

and ſpaſms with which the patient at ſuch times is often afflicted. The decoctum chamœmeli muſt alſo be adminiſtered in clyſters, until the inteſtines be likewiſe perfectly cleanſed: after which an opiate * muſt immediately be given. If the opium be vomited up, it is then to be given in double the quantity, by way of clyſter, in four or five ounces of warm water, and repeated at an interval or ſix or eight hours.

When other methods have failed to ſtop the vomiting, I have often found ſucceſs from the external application to the ſtomach of warm wine and ſpices, of opium and camphire †. A drop of the oil of cinnamon,

* ℞ Sal abſinth. ſcrup. i., ſucci limon, unc. ſs vel q. s. ad ſaturationem, aq. menth. vulg. ſimp., drach. x., aq. menth. vulg. ſpir., drach. ij. ſyrupi papav. alb. drach. i. tinct. thebaic., gutt. xxx. M. Vel ℞ Opii puri gr. i. olei menth. piper. eſſential gutt. i. M. fiat pilula.

† ℞ Linimenti ſaponac. drach. vi. tincturæ thebaicæ drach. ij. Miſce.

℞ Camphoræ (olei olivar. unc. ij. ſolut.) unc. i. tincturæ thebaicæ unc. ſs. Miſce.

mon, taken upon a piece of ſugar, muſk, mint, and ſometimes elixir vitrioli and ſpiritus nitri dulcis, are the moſt proper internal medicines; allowing the patient for drink, mint-tea, toaſt and water, or almond-emulſion, and ſometimes chicken broth. But if the vomiting continues for ſome time to be very obſtinate, and the bowels be well purged, the ſafety of the patient will then entirely depend on bathing the ſtomach well with opiates and camphire, and on adminiſtering tinctura thebaica in clyſters, to be repeated with an increaſe of the opiate every ſix hours, until the vomiting and pains ceaſe, or the patient's head be affected by it.

In ſuch obſtinate and dangerous caſes, I have ſometimes been obliged to increaſe the quantity of tinctura thebaica to half an ounce in the clyſter, before the ſpaſms could be removed. But previous to giving

* ℞ Emplaſtri e cymino unc. i. ſs., opii, drach. ſs. camphoræ, drach. i. olei eſſential. menthæ vulgar., gutt. x. Miſce, fiat. s. a. emplaſtrum regioni ventriculi applicandum.

opium

opium in ſo large a quantity, I generally applied bliſters to the legs, after uſing the pediluvium; or if a violent and fixed pain in the ſtomach, or in any part of the abdomen, had continued from the beginning of the diſeaſe, which was not removed by bleeding or warm fomentations, I then applied a bliſter to the ſeat of that pain.

In the dyſentery or cholera morbus, when the whole abdomen is hard, tenſe, and painful, immediate eaſe is often procured by fomenting it with a decoction of chamomile and elder flowers, together with ſome heads of white poppies, ſprinkling the flannels dipt in the fomentation with ſpir. vin. camphoratus, immediately before they are applied.

In ſome dyſenteric caſes, opium proves moſt effectual when given by the mouth, in others when in clyſters. For other antidyſenteric medicines, ſee Formulæ medicamentorum.

SECT. III.

The Dry Belly-ache.

BESIDES the prefcriptions formerly * given for the dry belly-ache, from two to four or five table-fpoonfuls of the oleum palmæ Chrifti may be taken every hour, until a ftool is procured. I am informed fome have received benefit from a mixture of equal parts of fweet oil, lime-juice, and Holland's gin; of which two fpoonfuls were taken every half hour, until the pains were abated by a plentiful fweat; though after all, the principal relief in this painful difeafe is to be expected from perfifting in the ufe of opium, in clyfters †, and in embrocations ‡ on the part affected, until the pain is fomewhat mitigated; taking then the

* Vid. Formulæ medicamentorum.

† ℞ Aq. font. tepid. unc. vi. tinct. thebaic. drach. unam — ad femunciam, M. fiat enema.

‡ ℞ Liniment. faponac. unc. iij. tinct. thebaic. unc. ij. M.

oppor-

opportunity of adminiſtering cathartic medicines by the mouth to procure ſtools, whoſe operation will be greatly forwarded by the warm bath. When there is a frequent inclination to vomit, an emetic may be given, which will ſometimes alſo procure a ſtool. From the operation of an emetic bile is often thrown up from the ſtomach, but the ſtools are not bilious; they are generally hard and very coſtive: purging clyſters ought, therefore, to be adminiſtered every hour, and opium, to the quantity of two or three grains, at bed-time. The ſtomach in this diſeaſe will often retain medines tolerably well, when doſes of ſal catharticum amarum, with manna, and a decoction of ſenna, taken every hour, may produce the deſired effect. To prevent a relapſe, which is very frequent, the patient muſt be kept in a lax ſtate for ſome time afterwards, by the daily repetition of the ſame purgative medicines, or by gum pills with aloes*; and if afflicted with

* ℞ Pilul. gummos. gr. xv. camphoræ, aloes ſoccotrin. ana gr. iv. elixir aloes q. s. f. pilulæ iv. quotidie ſumendæ.

R Balſam.

with rheumatic or paralytic complaints, nervous and ſtrengthening medicines ſhould be taken.

When the vomiting is inceſſant, the pain very acute, and nothing can be retained upon the ſtomach, Dr. Eliot obſerves, that ſtools may be procured, and all the uneaſy complaints removed, by giving purgatives, joined with opiates and camphire *.

℞ Balſam. Peruvian. (in vitello ovi ſolut. durat.) drach. ij. aq. font., unc. vi., tinct. valerian. ſimpl., unc. i. ſpir. lavenduli comp., ſemunc. ſyrup. balſam., drach. vi: M. doſis unc. i. ſs. bis die.

Vel ℞ Sal ſuccin., ℈ß, ſal cornu cervi, gr. vi. aq. font., drach. x. aq. juniper. comp., drach. ij. ſyr. e corticib. aurant., drach. ij. M. fiat hauſtus octava quaque hora ſumendus.

* ℞ Pilul. ex colocynthide ſimp., ſcrupulum unum, calomelanos, camphoræ, ſingulorum, grana quatuor, opii, grana duo, fiant pilulæ numero ſex, quarum duæ aſſumantur quaque hora, donec bis terve ſoluta fuerit alvus.

Camphora cum guttulis aliquot ſpiritus vinoſi rectificati teratur, ut molleſcat, atque opium eodem modo emolliatur, his peractis perfecte miſceantur cum reliquis.

At

At the ſame time emollient clyſters ſhould be given, and the belly fomented with the fotus communis, to which ſoap ought to be added, when the conſtipation is remarkably obſtinate.

The dry belly-ache, though one of the moſt painful and excruciating diſtempers, ſeldom proves mortal, unleſs it has been occaſioned by ſleeping on the ground, expoſed to the night air, or by drinking immoderate quantities of newly diſtilled ſpirits, which are too frequently made uſe of in the beginning of the diſeaſe.

SECT. IV.

The Tetanus and Locked Jaw.

I Before obſerved, that the tetanus, emphroſthotonus and opiſthotonus, are moſt frequent in hot countries; in all which opium ſeems to be the principal remedy.

In theſe diſeaſes opium may be adminiſtered in large quantities, an hourly increaſe of

of the medicine being requiſite, in proportion to the violence of the ſpaſms. In a caſe of the opiſthotonus at Haſlar hoſpital, the extractum thebaicum was given, to the quantity of a ſcruple, in leſs than twenty-four hours: and in another caſe it was remarkable, that an application of opium and camphire to the feet inſtantly removed the ſpaſm; which, upon taking off the application, immediately returned with its former violence. This effect was ſeveral times produced by the repeated applications of theſe preparations.

But the ſpaſm moſt fatal to Europeans in hot countries is the locked jaw, which is the frequent conſequence of an amputation, or even ſometimes of a ſlight wound in thoſe climates. It was fatally experienced towards the end of the late war, at one of the moſt remarkable ſieges in the Weſt Indies, that five perſons in ſix, whoſe limbs were amputated, died of that ſpaſm.

There appears to be no fault in the blood in ſuch caſes, nor an univerſal diſorder in the ſolids, preying on the vital organs, or debi-

debilitating the principles of life, this being merely a local mufcular fpafm; hence it is to be hoped that a fufficient number of experiments will difcover an effectual method of removing this dangerous fymptom; and for this purpofe I beg leave to offer a few confiderations.

As the locked jaw moft frequently makes its appearance in warm weather, and in hot countries, would not an immediate change of air prove the means of faving the patient's life? Where it is impoffible to remove the patient into a cool air, would not fome benefit be derived from the immerfion of the whole body, or part of it, in cold water; adding frequently fal ammoniacum or nitre, in fuch quantities, that by the continual folution of thefe falts, the water may acquire the utmoft degree of coldnefs?

As the internal ufe of opium has been frequently found ineffectual to remove this dreadful fymptom, would it not be greatly affifted by the external application of a ftrong folution of opium to the wounded part, and even to the feat of the fpafm, in

fuch

ſuch a quantity, as to bring a numbneſs and paralyſis on thoſe parts?

The uſe of mercurial ointment in the tetanus has of late, I am informed, been attended with conſiderable ſucceſs. As ſoon as a ſalivation is produced, it is ſuppoſed the cure is accompliſhed; and, in order to procure this more ſpeedily, the patient is put into the warm bath. Opium ſhould be given at the ſame time to procure ſleep. A more particular account of this, we hope, will ſoon be publiſhed.

SECT. V.

The Barbiers.

THE barbiers, a ſpecies of the palſy, is a diſeaſe moſt frequent in India. It diſtreſſes chiefly the lower claſs of Europeans; who, when intoxicated with liquors, frequently ſleep in the open air, expoſed to the land winds. Its attack is generally ſudden, and entirely deprives the limbs of their motion. Sometimes all the extremities

mities of the body are affected, ſometimes only part of them. The natives of the country have a method of putting the patient into a hole dug in the ground, and covering him with ſand up to his neck: this is done in the middle of the day, and he remains there as long as he can bear the heat of the ſand, which is conſiderable.

Camphire and a decoction of Guaiac wood have ſometimes produced a good effect; alſo the expreſſed bitter oil of the mergoote, an Indian plant. But notwithſtanding the uſe of the moſt powerful and moſt nervous medicines, the patient generally continues paralytic for ſome months, unleſs he is removed into another air.

On the Malabar coaſt this diſeaſe is more violent and frequent, and attacks both natives and ſtrangers, eſpecially in the months of December, January, February, and March. During theſe months the land-winds iſſue every morning about ſun-riſe, from the neighbouring mountains, with remarkable coolneſs; and ſuch as being tempted by the ſerenity of the ſeaſon, ſleep expoſed to

these winds, are often suddenly seized with a very painful sensation in the periosteum of the arms and legs.

In persons of a good constitution this pain abates as the day advances, and as the air becomes warmer; but in others it continues for a considerable time, attended with a weakness of the knees, and uneasy sensations in the calves of the legs and soles of the feet, especially on any attempt to walk. This is scarce ever cured by medicine till after the shifting of the monsoon, unless the patients can be removed to the coast of Coromandel, or to any place to the eastward of the Balagat mountains, where, by the change of air, they quickly recover.

But I now pass on to offer a few directions, for the benefit of those Europeans, who perhaps, after their constitutions have been impaired in hot and unhealthy climates, are desirous of returning to their native country, and this we shall make the subject of the following chapter.

CHAP.

CHAP. II.

Directions for the benefit of those whose constitutions have been impaired abroad.

SECT. I.

Directions for those of a relaxed and bilious habit of body.

PEOPLE whose health has been impaired abroad, and who propose to revisit England, should endeavour to arrive in the beginning of summer, as they will find the winters of Great Britain, on their first arrival, too piercing and severe for their constitution.

If they have loſt their complexion, and have a yellow tinge in their eyes or countenance; if the ſtomach be much weakened, the digeſtion bad, and the conſtitution infeebled and relaxed; if they have had frequent fits of the cholic, or if an hardneſs remains in the liver, ſpleen, or in any of the bowels, they ought immediately to go to Bath.

They will find the Bath waters an excellent reſtorative, and well adapted to theſe complaints; as alſo for a contraction of the limbs remaining after the dry belly-ache.

Thoſe who are afflicted with bilious cholics and obſtructions, occaſioning a hardneſs of the abdomen, frequent coſtiveneſs, and a vomiting at intervals of pure bile, ſhould take a tea-ſpoonful of elixir aloes morning and evening, and 20 or 30 drops of elixir vitrioli twice or thrice a day, upon an empty ſtomach. There are however three caſes of ſuch patients which forbid the uſe of the Bath waters, and which require very different means of relief: a conſumptive

habit

habit of body, a dropſical habit, and an habitual flux.

SECT. II.

Directions for thoſe of conſumptive and dropſical habits of body.

A Conſumptive habit of body is commonly attended with an obſtinate cough. I would adviſe ſuch as are in that ſituation, before they land in England, to paſs a winter either in Liſbon, Naples, or the ſouth of France. Sometimes the hot-well waters of Briſtol, a voyage at ſea in the ſummer time, and iſſues in the affected ſide, have been attended with benefit *.

In habits exhauſted by a long reſidence in warm climates, and by frequent returns of the diſeaſes prevalent in them, even when

* See the proper preſcriptions under the article Phthiſis in Formulæ Medicamentorum.

thoſe unhappy perſons arrive in Great Britain at an unfavourable ſeaſon of the year, with hardneſs of the abdomen, bilious purging ſtools, and hectic fever waſting their bodies, and diminiſhing their ſtrength, Dr. Eliot informs me, that he has often ſucceeded in reſtoring their conſtitutions, by laying aſide the uſe of opiates, aſtringents, and the whole claſs of thoſe medicines commonly called ſtrengtheners, and putting them upon a diet of milk and fruits; at the ſame time giving the ſal polychreſtum as an alterative; or if it produced too much irritation in the ſtomach and bowels, giving it with gum arabic.

During this courſe, and whilſt the hardneſs remained, the belly was rubbed, night and morning, with a ſtrong decoction of the cicuta made in oil.

Dr. Eliot likewiſe obſerves, that in all conſumptive caſes, where the fever was conſiderable, riding as well as every other exerciſe did hurt, increaſed the violence of all the ſymptoms, and rendered the diſeaſe more ſpeedily fatal.

The

The Doctor likewiſe informs me, that though he has been induced by very reſpectable authorities to give the bark in ſcrophulous habits, yet he has never ſeen any good effects from the uſe of it, where there were marks of inflammation, but that generally it produced a confirmed phthiſis, by increaſing the fever, and bringing the tubercles to ſuppuration.

He alſo obſerves, that he has been confirmed in his opinion with regard to the bad effects of the bark in ſuch caſes, both by the ſucceſs which has attended a different treatment in his own practice, and by the repeated obſervations of Sir William Duncan, a phyſician of great ability and experience, who after upwards of thirty years practice in London, and the moſt frequent opportunities of treating patients who laboured under all the various degrees of conſumptions, and obſtructed glands, from hereditary as well as from other cauſes, yet never ſaw any benefit from giving the bark, where theſe complaints were attended with an inflammatory fever, but generally found

that the diſeaſe was fixed by it, and rendered incurable.

Thoſe who are afflicted with a dropſical habit of body, may come directly from a hot country to England, as a cool air will contribute much to their recovery. The beſt method of treatment of this diſeaſe has been given by Dr. Monro and Baron Van Swieten *, to which I have only to add, that when the conſtitution was tolerably ſound, I have often cured very obſtinate dropſies, by exciting a gentle ſalivation with a ſcruple of pilulæ mercuriales †, taken every other night, and on the intermediate days giving a diuretic mixture of ſyrup of ſquills, with ſal diureticus.

By this method I cured above 40 dropſical patients in the year 1765, who were

* See Monro's Eſſay on the Dropſy, and Van Swieten Comment. in Boerhaavii Aphoriſmos, tom. iv.

† ℞ Aq. pulegii ſimpl. unc. v. aq. raphani comp. unc. i. ſal diuret. drach. i. oxymel. ſcillit. unc. ſs. M. cap. unc. ſs. 4tis horis.

ſeized with the diſeaſe after obſtinate intermitting fevers.

SECT. III.

Of an habitual Flux.

THE moſt frequent malady with which perſons are afflicted, who have ſuffered much ſickneſs abroad, is an habitual flux.

When rhubarb and other medicines have failed, and particularly when ipecacoanha, in ſmall doſes, though joined with opiates, ſeemed to ruffle ſuch patients, I have obſerved good effects from ten grains of lapis calaminaris finely levigated, then mixed with an equal quantity of philonium Londinenſe, and taken morning and evening; as alſo from a decoction of the Semiruba bark*, when

* ℞ Corticis Semirubæ unciam unam, aquæ fontanæ ſeſquilibram, coque ad libram unam. Tum colandus

when it did not occafion a naufea or fick-nefs, which it fometimes does.

Among an uncommon number of fuch patients, whom I have had frequent opportunities of vifiting, I always found, that if the flux was very obftinate, no relief could be obtained without the aid of opium. There was a neceffity for adding it to all the other medicines, whether purgative or aftringent. Opiates, efpecially thofe of the warmer kind *, are as fpecific in fuch cafes as the bark is in agues: and if the patient feems more relaxed by the ufe of them, or more purged after the fhort refpite obtained from them, thefe are proofs of the ftrength

landus eft liquor, quem totum partitis hauftibus ægrotus ebibeat quotidie ante meridiem.

This medicine I firft ufed on the recommendation of Doctor Wind.

* ℞ Philon. Londin. drach. fs. pulv. rhabarb. gr. x. fyrupi papaver alb. q. s. f. bolus mane et hora decubitus fumendus.

℞ Olei cinnamomi, guttam unam, opii puri, granum unum, confect. cardiac. boli gallicæ fing. fcrupulum unum, fyrupi cujuflibet, q. s. f. pilulæ.

of

of the diſeaſe overpowering the efficacy of the remedy, and by its continuance ſinking the patient's ſtrength.

I have ſeen an hundred caſes of this ſort, where the whole fluids of the body having been (as it were) drained by a long continued flux, the diſcharge at length ſtopt, and the patient lived afterwards in good ſpirits for ſome weeks, though reduced to a perfect ſkeleton. After death, the inteſtines were found perfectly free from ulcerations, and in a ſound ſtate.

END OF PART III.

APPENDIX.

Concerning Agues.

I CANNOT prevail upon myſelf to conclude this ſubject, without offering a few directions for the benefit of thoſe who reſide in low, damp places in England; which may be alſo beneficial to others in ſimilar ſituations.

A perſon may be ſeized with an intermitting fever, or what is vulgarly termed an ague and fever, in the moſt wholeſome ſpot of ground in England.--This diſeaſe however is peculiarly endemial, in low, woody and marſhy places; where perſons of all ages,

ages, and of both ſexes, are ſubject to its frequent attacks; from which even infants at the breaſt are not exempted. It is far from being mortal to the natives, though its long continuance is apt to impair their conſtitutions, and to produce obſtinate chronical diſtempers.

In this endemial ſickneſs the greateſt danger is to be apprehended from its appearance at particular ſeaſons, in the form of a continual or remitting fever, attended with violent and alarming ſymptoms, eſpecially that of a delirium; from which it is commonly denominated the phrenſy fever.

If large quantities of blood be repeatedly taken from patients labouring under this diſeaſe, by miſtaking it for a true inflammatory fever, its obſtinacy and fatality will be greatly increaſed. Theſe profuſe bleedings are more particularly hurtful, when ſymptoms indicate a ſpeedy remiſſion of the fever, or its termination in a regular ague, commonly prevalent at the ſame time.

It

It is much to be wifhed that we were poffeffed of a medicine which would fpeedily remove this fpecies of fever, or bring it to a perfect intermiffion, fo that the bark might be adminiftered with fafety. I have already mentioned, in the former part of thefe fheets, the method which proved moft fuccefsful for this purpofe, during an unufual and violent prevalence of this fever, in the year 1765. But having made frequent mention of the febrifuge virtue of antimonial medicines, in this and my former writings on fevers, I fhall here take the opportunity of delivering my fentiments more fully upon them.

By an order from the right honourable the lords commiffioners of the admiralty, the navy of England and the naval hofpitals were fupplied with a medicine, called Doctor James's Powder; with inftructions to obferve and report the effects of it in fevers.

In obedience to that order, this powder has been given at Haflar hofpital, in various cafes of fevers, to above a thoufand patients,

for

for whom antimonial medicines were judged ſafe and proper.——It was always thought moſt adviſeable to give only a ſmall doſe at firſt, in order to try its effects on the patient; as antimonials, in a full doſe, often prove unexpectedly violent, and hurtful in their operation. A third or fourth part of the powder contained in one paper was commonly preſcribed at firſt, and repeated every four hours. When the whole quantity in a paper, which varies in weight, from 24 to 30 grains, had been thus adminiſtered, without producing any ſenſible effect, half a paper was given in one doſe, and repeated every ſix or eight hours; after which, if the patient ſtill remained coſtive, and it was judged that ſtools would be uſeful, a whole paper was adminiſtered at once: that quantity having been frequently found to be a mild and efficacious purge, even after the receſs of the fever.

If the patient could ſwallow a bolus, this powder was mixed with conſerva fructus cynoſbati, except when there was a diarrhœa, or too frequent ſtools; in which caſe it was adminiſtered in a proper doſe of philonium Londi-

Londinenſe, which effectually checks its purgative quality. When there was a ſubſultus tendinum, four or five grains of camphire were added to the powder, and other medicines occaſionally.

This powder was given with moſt ſucceſs, when the head was afflicted with violent pain, or ſtupor, and often when the patient was delirious or comatoſe, or both; in which laſt ſtate, after he had continued ſeveral days, there were many inſtances of an apparent ſpeedy and ſalutary effect from this medicine.—And it was remarked, that this effect was produced, whether the medicine evacuated by ſtool, or acted only as an alterative; and it ſeemed not to depend upon the benefit of any evacuation, but upon the ſpecific febrifuge virtue of the powder.

It is however to be obſerved, that when this powder was given, nothing had been omitted, on account of its adminiſtration, which could promiſe relief or ſafety to the patient; bleeding, bliſtering, and all other requiſite evacuations were uſed, together with

with the moſt proper regimen, in the ſame manner as if no ſuch powder had been given.

But as fevers differ much in their nature, one remedy, or one powder, cannot be univerſally ſucceſsful in all fevers; for as bleeding is known to be of great benefit in ſome, ſo it will be found, towards the concluſion of this Appendix, that opium is of equal benefit in others; and the effects of bleeding and opium are ſo entirely oppoſite to each other, that the miſtake of applying one of thoſe remedies where the other is proper, muſt be attended with bad conſequences.—In the ſame manner, the promiſcuous uſe of this powder, in the hands of the ignorant, and of quacks, will render it doubtful, whether ſuch a remedy would do moſt good or harm. As phyſicians cannot venture to preſcribe a medicine, of a compoſition unknown to them, being unable to judge from what ingredient or quality in that compoſition any bad ſymptoms may have proceeded, which might accidentally be produced by its uſe; ſo upon the whole, this medicine, until made public,

public, is not likely to be of great benefit to mankind.

As to other antimonial medicines, ſuch as the Kermes mineral ſo much uſed in France, and the antimonium diaphoreticum, I have very little experience of their effects; but, from repeated trials, find the tartarum emeticum poſſeſſed of a virtue eminently febrifuge, and ſimilar to that of Dr James's powder.

This antimonial preparation requires alſo to be occaſionally compounded with other medicines, to improve its efficacy, or to prevent its irritation of the ſtomach and bowels *. Half a grain † of it will be quite ſufficient for the firſt doſe, which may be repeated every ſix hours.

* See more on this ſubject, in my papers on Fevers, page 82 & 83.

† Recipe Aq. alexiter. ſimpl. drach. x. aq. alexiter. ſpir. ſyr. e corticibus aurant. ſingulorum, drach. i. tartar. emetic. granum dimidium. Miſce. fiat hauſtus, cui adde, pro re nata, nitri gr. iij. vel iv.

Upon ſeveral comparative trials, in ſimilar caſes of patients, I have found the tartarum emeticum to be poſſeſſed of a greater febrifuge virtue than the vinum antimoniale. I have however ſometimes preſcribed with ſucceſs the vinum antimoniale in large quantities, when a patient, in a fever, had continued for ſeveral days in a doubtful ſtate of recovery, comatoſe, and inſenſible, with a continual ſtupor on the brain, and a violent ſtruggle and oppreſſion of the vital organs.

In this caſe, I give a drachm of the vinum antimoniale diluted with water, and repeat it every two hours, with the increaſe of half that quantity, until an ounce is taken, or ſome ſenſible effect produced. If it brings an inclination to vomit, this evacuation ſhould be promoted by drinking warm water. When there is a tendency to a looſeneſs, leſt the operation of this medicine by ſtool ſhould reduce the patient's ſtrength, I order forty drops of the tinctura thebaica to be added to an ounce of this wine; having found the operation of all theſe

these antimonial medicines this way easily prevented by an opiate.

A caution is here requisite, carefully to avoid the addition of an alkali to an antimonial preparation, as it would decompose the antimony in most of its preparations commonly used. Hence the testaceous powders, frequently combined with tartarum emeticum, would seem totally to divest that medicine of its efficacy. Let me add, that these medicines being of such importance, ought to be prepared with the greatest exactness, and used when newly made, as long keeping, or an exposition of them to the air, greatly injures their virtues.

But continual fevers not being the subject of this Appendix, I now proceed to the more immediate object of our attention, the prevention and cure of intermitting fevers.

For the benefit of such persons as reside on unhealthy situations in England, I offer the following directions.—First, in autum-

nal and aguiſh ſeaſons, carefully to avoid all ſudden tranſitions from ſevere cold to great heat, or from great heat to an exceſs of cold, but particularly not to expoſe the body to an eaſterly wind, rain, or night fogs; which produce a chillneſs, and are generally ſaid to be productive of colds. It is to be obſerved, that the cauſes of the diſeaſes of which we treat are of two kinds.

The immediate cauſe of agues in thoſe ſituations, is the ſoil and air of the place: but the pre-diſpoſing cauſes, or thoſe which render the conſtitution ſubject to their attacks, are many and various; ſuch as lying in a damp room, in linnen not ſufficiently dry, or travelling in a cold damp night, neglecting immediately to put on dry clothes after being wet by rain, and the like incidents.

The vulgar commonly aſcribe moſt fevers, agues, and other indiſpoſitions, both in hot and cold climates, to ſuch cauſes, or to irregularities in living: but the truth is, that all theſe pre-diſpoſing cauſes, vulgarly aſſigned

as

as ſolely productive of thoſe diſeaſes, only diſpoſe the conſtitution to receive the hurtful impreſſions of a bad air.

The ſecond direction is, for ſtrangers not to reſide in ſuch places during thoſe ſeaſons, but to retire into large towns, where the bad effects of a damp air are in ſome meaſure removed by the number of fires, and the ſmoke. For it has always been remarked, that agues are not only more frequent, but alſo more violent, in the country, and farm-houſes, than in large villages or towns; and a retreat thither, or to a more dry and elevated ſituation, although at no great diſtance, often proves the moſt effectual preſervative againſt them.

Thus, in the autumn of the year 1759, two regiments, which lay encamped on South-Sea Common near Portſmouth, were greatly afflicted with intermitting fevers and fluxes: but upon leaving that ſpot of ground, and encamping about five miles diſtant from it, on Portdown-hill, not one man was afterwards taken ill of thoſe diſeaſes.

When neceſſity obliges men to remain in unhealthy ſituations, they ſhould ſleep in the higheſt apartments of the houſe, which look to the riſing and meridian ſun. Houſes built in ſuch places ought to be ſo conſtructed as to have no doors or windows fronting a damp ſoil or marſh; a precaution which would undoubtedly contribute much to the health of its inhabitants. Wood fires kindled in the rooms morning and evening, during the continuance of an eaſterly wind, will prove ſerviceable, eſpecially if made of reſinous woods, ſuch as pine or fir.

Thirdly, Perſons in ſuch places and ſeaſons ſhould avoid expoſing themſelves, when faſting, to the chills of the morning and evening air, and never go abroad with an empty ſtomach; but, previous to labour or amuſement in the fields, they ſhould take either a glaſs of wine, with a ſlice of bread, or drink a ſmall quantity of chamomile or bark tea.

When labourers are obliged to work in the open air, before the ſun has diſperſed the

the unwholeſome vapours ariſing from low meadows or marſhes, their maſters ſhould infuſe ſome garlic, bark, and rhubarb, in brandy, and give them a dram of it, either by itſelf, or diluted with water, in the morning, before they go abroad. This would prove a good preſervative of health, eſpecially to ſuch as are to be employed in digging ditches, draining marſhes, and the like dangerous occupations. Labourers ſo employed would do well to chew garlic or rhubarb, to put ſmall plugs of tobacco in the noſtrils, and not to ſwallow their ſpittle.

In all damp ſeaſons and places, ſmoaking tobacco is beneficial, as alſo a more plentiful diet of fleſh, with wine and ſpices, the frequent uſe of the cold bath, and the fleſh bruſh. The pit of the ſtomach, the feet, and the back-bone, are more particularly to be guarded from cold, by coverings of flannel: and perſons of a delicate conſtitution may not only have their flannel, but alſo their linnen and wearing apparel, daily fumigated and warmed, by the ſteams ariſing from gum Benjamin thrown on embers.

Such as would rather chooſe external, though leſs efficacious means of ſafety, may wear garlic or camphire, ſewed up in a piece of linnen, ſuſpended at the pit of the ſtomach, or on the groin. And indeed the known efficacy of remedies outwardly applied, and the extreme ſubtilty of the effluvia from thoſe here mentioned, render ſuch preſervatives not altogether ſo contemptible as commonly imagined.

Strangers in ſuch places, or thoſe who are ſubject to agues, ſhould take every other night two or three tea-ſpoonfuls of tinctura ſacra, or a few grains of pilulæ Rufi. Theſe medicines ought not to be taken in ſuch quantities as to become purgative, but only to keep the body in a gently lax ſtate.

For farther prevention, a wine glaſs of an infuſion of the bark and orange peel in water *, or what will prove more effectual, a table-ſpoonful of a ſtrong tincture of the

* Recipe Cort. Peruvian. contus. unc. i. cort. aurant. hiſpalienſ. ſemunciam, aquæ fontan. bullient. ſeſquilibram. Simul infundantur. Subſidentia depuretur liquor et tempore uſus caute effundatur.

bark

bark †, in ſpirits, diluted occaſionally with water, may be taken every morning before breakfaſt.

When a perſon is attacked with a fit of ſhivering, or the chills of an ague, he ought to go to bed; and mixing about two ounces of vinegar with a quarter of an ounce of finely powdered chalk, or of prepared crabs eyes, ſhould drink them immediately, while in an effervefcent or fermenting ſtate. This draught generally ſhortens the cold fit, and produces a profuſe ſweat; and the repetition of it in all the ſubſequent paroxyſms will prove equally ſerviceable in mitigating and removing the cold fit; as I have experienced in ſeveral hundred caſes.

But for the cure of this diſeaſe, early recourſe ſhould be had to medical advice; and the phyſician will be able to judge what preparation of the body is requiſite, previous to the adminiſtration of the bark: a

† Recipe Cort. Peruvian. trit. unc. i, ſpirit. vin. Gallic. unc. viij. Digere per quatriduum et cola.

vomit,

vomit, or a ſtomachic purgative, ſuch as tinctura ſacra, generally anſwer well.

It is not unworthy our obſervation, that agues or intermitting fevers have been ſo malignant after hot ſummers, in ſome unhealthy ſpots of England, that there was an abſolute neceſſity to adminiſter the bark upon the firſt intermiſſion of the fever, with ſcarcely any preparation of the body, as a return of the fit often proved fatal.

We before remarked, that at the late ſiege of the Havannah, the adminiſtration of the bark was ſaid to have produced the dropſy, jaundice, bilious obſtructions, and other chronical diſtempers: all of which were the effects of a bad air, or of the continuance of the fever, and not the conſequence of having taken the bark. Indeed moſt of the prejudices commonly entertained againſt this medicine are founded on imperfect obſervations, and proceed from not diſtinguiſhing the effect of the remedy from that of the diſeaſe.

I had

I had daily oportunities of knowing the truth of this matter, during the uncommon prevalence of remitting and intermitting fevers in the year 1765, and in the two following years; when they ſpread themſelves over the greater part of England, and furniſhed me with a number of patients, labouring under all the various ſymptoms of theſe diſeaſes.

When the ague was ſtopped by the bark, immediately after the firſt or ſecond fit, as in my own caſe, and that of 200 of my patients, neither a jaundice nor dropſy enſued: whereas when the bark could not be adminiſtered, on account of the imperfect remiſſions of the fever, or when the patient had neglected to take it, either a dropſy, jaundice, or a conſtant head-ach, were the certain conſequences; and the degree of violence was in proportion to the number of the preceding fits, or to the continuance of the fever. By every paroxyſm, the dropſical ſwellings were viſibly increaſed, and the colour of the ſkin rendered of a deeper yellow.

When the fever continued a few days without remiſſion, the belly and legs were generally ſwelled; at the ſame time a violent head-ach and vertigo afflicted the patient, inſomuch that even after the fever had left them for a fortnight or three weeks, ſome were not able to walk acroſs their chamber.

When the returns of the fever were perfectly regular, and even but ſlight, four or five fits of a ſimple tertian were ſometimes followed by the moſt dangerous ſymptoms; eſpecially in the year 1765, when theſe fevers raged with the greateſt violence: as in the following inſtance—

A boy of 14 years of age was attacked with an intermitting fever, for whom I ordered a doſe of tinctura ſacra, and afterwards the bark; but to my great ſurpriſe, notwithſtanding ſeveral ounces of bark had been preſcribed, his ague ſtill continued. After having ſuffered ſix fits of it, I found much water in his breaſt, belly, and legs; and his countenance was ſo bloated and yellow,

low, that his cafe feemed defperate. I was then informed, that having an infuperable averfion to medicines, he had not taken any of the bark, but was now willing to fubmit to every thing that would contribute to his recovery: upon which I ordered him to take a drachm of the bark every two hours, and occafionally a mixture of fyrupus fcilliticus with fal diureticus. Thus another fit, which in all probability would have put an end to his life, was effectually prevented.

If, as frequently happened, a dropfical patient fuffered a relapfe into the ague, there was an abfolute neceffity for putting an immediate ftop to it by the bark; and in above feventy fuch patients, I never obferved any other than the moft beneficial effects to have accrued from that medicine.

I never prefcribed the bark until the patient was free from all fymptoms of the fever; and in that cafe, without regard to a cough, or any other chronical indifpofition, I ordered it to be given in large dofes. Of

between

between four and five hundred patients, afflicted with remitting or intermitting fevers, under my care that year, I loſt but two; neither of whom had taken the bark.

My method of treating thoſe patients will appear in the two following caſes:

1. A young gentleman was ſeized with a fit of an ague, and in half an hour afterwards became delirious, then comatoſe, and at length ſpeechleſs. Finding him in this laſt ſtate, I ordered a bliſter to be immediately applied to his back, and a cordial julep with ſalt of hartſhorn to be poured into his mouth. In two hours afterwards, upon recovering his ſenſes, I ordered him two ounces of tinctura ſacra, and then, without waiting for the complete effect of that medicine, half a drachm of the bark to be taken every four hours, as ſoon as the fever and ſweat had abated. He began the uſe of the bark three hours after he had taken the tinctura ſacra; but before he had taken five drachms of it, he was ſeized with a ſecond fit, and in like manner became delirious,

delirious, comatofe, and fpeechlefs. Sinapifms were applied to his feet, and other irritating applications ufed, until the fever was terminated by a plentiful fweat. Thus having twice narrowly efcaped dying in the fit, a drachm of the bark was ordered to be taken punctually every hour. He foon took two ounces of it; which produced fo happy an effect, that the fever left him entirely, without any fubfequent fymptoms of dropfy, jaundice, violent head-ach or weaknefs, which either the continuance of the fever, or its repeated attacks, often brought upon others; fo that he was quickly reftored to perfect health.

2. A lady, in the firft attack of an intermitting fever, was feized with a violent pain in the ftomach. Every fubfequent fit increafed that pain, infomuch that at length it became intolerable, was attended with a violent delirium, and brought on a great difficulty of breathing, a hiccup, a ghaftly countenance, and the fymptoms of approaching death.

As ſhe found no benefit from emollient fomentations, from the external application of tinctura thebaica, and even of a bliſter, I ordered two ounces of the bark to be taken during the remiſſion; which effectually prevented the return of the fever. This medicine did not in the leaſt increaſe the pain in the ſtomach, but greatly contributed to its relief by removing the fever, every fit of which had ſo exaſperated its violence.

In thoſe patients who laboured under a cough, attended with a pain in the ſide, affecting the breathing, when the pain was not relieved by warm fomentations, by the balſamum anodynum Batæi, or by a bliſter, I generally ordered a few ounces of blood to be taken away, and endeavoured to ſtop the fever as ſoon as poſſible, by the adminiſtration of the bark, having found that every return of the fever increaſed all ſuch pains. In ſhort, I have given the bark in every circumſtance attending intermitting fevers, during their remiſſion, but never in the fit.

For

For three years paſt, I have annually preſcribed upwards of one hundred and forty pounds weight of bark, and I never obſerved any bad ſymptoms which could with propriety be aſcribed to its uſe, except in two inſtances.

One in the caſe of a young woman, whoſe menſes were ſuppoſed to have been obſtructed by it for three months: the other in that of a perſon ſubject to an habitual aſthma, who, after taking a drachm of this medicine, was ſeized with a ſuffocating fit of the aſthma, which continued until he vomited up the bark, when he received immediate eaſe.

I have obſerved in intermitting fevers, that patients are equally ſubject to relapſes, whether cured by the bark, or by any other medicine; though I ſeldom preſcribed other medicines, until the bark had been firſt taken: and it was further obſerved, that in the winter of the year 1765, the quartan agues afflicted thoſe only whoſe conſtitutions had been weakened by the long duration of their former fevers.

In all thoſe intermitting fevers a vomit was adminiſtered, whenever the patient complained of a ſickneſs at the ſtomach, reachings to vomit, or a ſpontaneous vomiting; and the bark was never given till this ſickneſs was removed, and a purgative taken, to clear more perfectly the whole alimentary canal.

When the head-ach was very violent, and haraſſed the patient in the intervals of the fit, the ſucceſs of the bark was rendered ſtill more complete, by the application of a bliſter to the back.

A continuance of the bark, a change of air, and the cold bath, were often found requiſite to prevent a relapſe.

A giddineſs of the head, which is the ſymptom moſt commonly remaining after even a ſlight intermitting fever, was generally relieved by the * ſal cornu cervi, and the bark in wine.

* ℞ Aq. font. ℥vi. ſpir. vin. rectificat. ʒß. ſal. corn. cerv. ʒß. ſacchari, q. s. m. fiat julepum, capiat cochlear. duo ſubinde.

If, from the continuance of the fever, the patient was diſtreſſed with flatulence, a diſtenſion of the abdomen, and a ſwelling of the legs, a ſpoonful of tinctura ſacra, with the addition of thirty drops of the ſpir. lavend. comp. was ordered to be taken every night.

There is no doubt but that an intermitting fever may be removed without the aſſiſtance of the bark; and there is perhaps no other diſeaſe whatſoever, for which ſo many remedies are daily recommended.

Thoſe uſed by the vulgar are many; the principal of which are here enumerated.

In the cold fit, or juſt before its approach, are taken, from a glaſs to half a pint of brandy, by itſelf; or a glaſs of brandy, with a grated nutmeg, with half an ounce of brimſtone, or with the ſame quantity of powdered oyſter-ſhells.—A quarter of a pint of gin, with a tea-ſpoonful of pepper.—A

glafs of ufquebaugh, with a fpoonful of lemon-juice.—A pint of wine taken by itfelf; or a glafs of it with the white of an egg, with a fpoonful of the juice of houfe-leek, or with the fame quantity of the juice of plantain.—A fpoonful of the fpirit of turpentine.—Four fpoonfuls of the juice of rue.—Half a pint of the juice of netties.—Half a pint of the juice of groundfel.—Half a pint of a ftrong decoction of cinque-foil.—Half a pint of a ftrong decoction of fpearmint in milk.—A pint of a ftrong infufion of horfe-raddifh in ftale beer.—A pint of ftrong beer, in which fome broken pieces of glafs bottles or of flint-ftones heated in the fire, have been quenched, and boiled.—A whole lemon.—A vomit of fea-water.—The fnuff of a candle with nutmeg.—A drachm of bark and theriac with the juice of a large lemon.

In the intervals of the fit are taken,—Bay leaves dried and powdered, to the quantity of a drachm, three times a day.—The inner bark of the afh, from half a drachm to a drachm, with a fcruple of falt of

of wormwood, taken four times a day.—Half a drachm of the misletoe of the oak, three times a day.—The inner bark of the elm near the root, to the quantity of a drachm, three times a day.—Half a drachm of the root of black thorn, taken three times a day.—A drachm of Calamus Aromaticus taken nine mornings successively.—Half an ounce of brimstone in a glass of strong beer, taken three mornings successively.—Half an ounce of mustard-seed in half a pint of gin, three mornings successively.—A common spider gently bruised, and wrapped up in a raisin, taken either in the cold fit, or three successive mornings.——Five grains of cobwebs mixed with crumbs of bread, twice a day.—Half a pint of their own urine, taken three mornings successively.

The external applications used by the vulgar for this disease, are—A hard-boiled egg split, and applied hot to the wrists.—Camphire and saffron, hung in a bag at the pit of the stomach.—Rubbing the back-bone with garlic.—Bruised spiders and tobacco applied to the wrists.—Petroleum, applied

either to the feet or wriſts.—Yarrow to the feet.—Rue, with the buds of honeyſuckle, bramble and elder, to the wriſts or feet,—where they alſo apply mouſe-ear with vinegar and ſalt, wallpepper, ſhepherd's purſe, ſun dew, vervain, and others, which are generally applied about an hour before the fit.

In taking a view of theſe common and vulgar remedies for agues, we are led to obſerve, that by the ſpirits or wine drank at the approach of the fit, the patients generally become intoxicated, as they for the moſt part increaſe the quantity of wine or ſpirits, until that effect is produced, which occaſions an intolerable head-ache, and ſometimes puts a ſtop to the future returns of the ague. This cure is attended with great pain and danger. It is doubtful how far the other ingredients, mixed with the ſpirits or wine, may contribute to remove the diſeaſe, except ſuch as brimſtone, which is often taken in ſuch quantities as to occaſion a violent vomiting; an emetic taken an hour before the fit frequently proving ſerviceable. From the violent operation of the

ignited

ignited glaſs or flint quenched in beer, and frequently of the crude brimſtone, ſome arſenical particles may juſtly be ſuſpected to enter theſe compoſitions; and in this caſe, here will be no difficulty to account for their efficacy in curing inveterate agues.

Many of thoſe remedies are taken before the fit, with an intention to procure a ſweat; but for this purpoſe nothing is more ſafe and effectual than a tea-ſpoonful of the ſpirits of hartſhorn taken every half hour in wine, or in warm wine whey, until the patient falls into a ſweat: he ought to be kept warm in bed; and if the ſweat does not appear ſoon, bottles of warm water, or bricks heated in boiling water, ſhould be applied to his feet.

As to external applications, there is no doubt of their efficacy in this diſeaſe. Compoſitions of frankincenſe, cinnabar, camphire, wood-ſoot, turpentine, and ſuch like, applied to the wriſts, or ſometimes to the pit of the ſtomach, have been recommended by ſeveral very eminent authors;

but more particularly Fuller's frankincenſe plaiſters *.

I knew a gentleman labouring under a very obſtinate intermitting fever, who by applying to the wriſts whites of eggs beat up with ſalt, at the approach of the fit, often prevented it; eſpecially when a veſication enſued.—Bruiſed garlic will often produce the ſame effect, but is apt to occaſion fainting fits in delicate conſtitutions, as being too acrid and irritating. The anointing the ſpine of the back with the oleum ſuccini, will, in my opinion, prevent the fit of an ague as often as moſt external applications.

For children, the bark is ſometimes applied to the ſtomach and wriſts, in the form of a poultice, with theriac and camphire; or the powder of it, ſewed between the folds of a linnen jacket, and worn cloſe to the ſkin. Infants are ſometimes even dipped in a decoction of the bark.

* Vide Pharmacop. extemporanea Fullerii.

As to the quack medicines for this diſeaſe, the baſis of their compoſition is generally the bark, infuſed in wine or ſpirits, with an adition of ſnake-root and ſalt of wormwood. But perſons cannot be too cautious in uſing quack medicines for agues, as the poiſon of arſenic, in a ſmall quantity, is known to be very powerful in removing them—A remedy worſe than the diſeaſe, and often productive of a train of the moſt alarming ſymptoms!

But leaving thoſe vulgar and quack medicines, we paſs on to mention a few remedies which have been preſcribed for this diſeaſe by eminent phyſicians. Dr. Morton's powder for agues * has been much celebrated.

Dr. Boerhaave has recommended 20 grains of ſal ammoniacum to be taken two hours before the fit. This ſalt is perhaps beſt given in powder, wrapped up in wafer

* Recipe. Pulver. flor. chamœmeli ſcrup. i. antimonii diaphoretici, ſalis abſinthii, ſingulorum ſemiſcrupulum. Miſceantur; fiat pulvis, quarta quaque hora, durante apyrexia, ſumendus.

paper,

paper, that it may reach the ſtomach almoſt undiſſolved; and may be taken from a ſcruple to a drachm. Some add theriaca to the ſalt; which laſt medicine has been often taken by itſelf, upon the authority of Galen; and of late, both the ſal ammoniacum and theriaca are often joined with the bark.

Hoffman recommends mercurius dulcis and even a ſalivation, for the cure of obſtinate quartans. Dr. Huxham makes mention of mercurius alkalizatus, for the cure of intermitting fevers. Dr. Mead recommends, in caſe of a failure of the bark, a powder compoſed of chamomile flowers, myrrh, and ſalt of wormwood, with the addition of a little alum. A decoction of the flores chamœmeli has been much uſed, by way of a vomit, in this diſeaſe; and two ounces of this decoction, or of the infuſum amarum, with half a ſcruple of ſal abſinthii, taken every four hours, have been frequently preſcribed.

Before the diſcovery of the bark, the cure of agues was generally attempted by bitters,

ters, ſuch as chamœmelum, centaurium minus, gentiana, cortex aurantiorum, zedoaria. Theſe bitters, together with fixed alkali ſalts, are ſtill in great eſteem with ſome phyſicians, who entertain prejudices againſt the bark; which, it is to be hoped, will ſoon be removed.

Opinionum commenta delet dies.

Many patients have indeed an inveterate averſion to the bark, which is apt, by a long continued uſe, to produce a nauſea, and ſeems in ſome to loſe much of its efficacy. There are alſo inſtances of obſtinate intermitting fevers, which the bark has failed to remove.

In ſuch caſes I have preſcribed various other medicines; and none with greater ſucceſs than alum joined with nutmeg: but I find that there is no certain remedy, which proves always ſucceſsful in the cure of ſuch agues.

A bliſter to the back, and a decoction of bitters, with ſal abſinthii and ſal ammoniacum,

cum *, have ſometimes ſucceeded in inveterate agues. From ten to twenty grains of extractum gentianæ, taken twice a day, with two ounces of tinctura ſacra, three hours before the fit, have alſo removed very obſtinate intermitting fevers. And ſometimes five grains of the extractum cicutæ taken morning and evening; or, what has proved more effectual, ſmall beer in which ignited glaſs has been quenched, uſed for common drink during the courſe of the bark, in ſuch a quantity as neither to prove violently emetic or purgative. It is ſometimes apt to purge the patient, but when its operation this way is too violent, the purging is ſoon checked by an opiate. After the failure of the moſt powerful remedies, I have met with frequent inſtances of agues being removed by very ſimple methods, particularly by giving tea-ſpoonfuls of ſpirit of hartſhorn in warm balm tea at the approach of, and during the cold fit. The moſt obſtinate intermittent I ever had occaſion to ſee, was removed by a

* Vid. Formulam medicamentorum, ſub articulo Febris intermittentis.

change

change from the land to the ſea air, as the patient never had one fit after having been ſent on board a ſhip.

Among many other remedies, I have given the cortex caſcarillæ, to the quantity of half a drachm every four hours, but found its effects inconſiderable. I have alſo tried a grain of the vitriolum cæruleum, taken twice a day; a medicine ſaid to be uſed in the London hoſpitals: but as it occaſioned a conſtant ſickneſs and vomiting, even when joined with an opiate, few patients could be prevailed upon to perſiſt in the uſe of it.

Having read an account in the Philoſophical Tranſactions *, of the Faba Sancti Ignati being adminiſtered to the quantity of a ſcruple, and obſerving it recommended in the Madrid Pharmacopœia, as a remedy for intermitting fevers, under the title of Faba Febrifuga, I gave this medicine to ſeveral patients. Two grains of it, infuſed in two ounces of boiling water, made a

* Vid. The Philoſophical Tranſactions, N° 249, 250, and 257.

nauſeous

naufeous bitter; which, repeated twice a day, cured four patients of quartan agues, but failed in double that number. Various other medicines have been prefcribed with fuccefs †.

But

† Rec. Aluminis rupei, gr. xv. nucis mofchatæ extracti cort. Peruvian. fingulorum gr. x. fyrupi e cort. aurant. q. s. mifce. fiat bolus bis die fumendus.

Rec. Florum martialium, falis ammoniaci, fingulorum, gr. viij. myrrhæ gr. iv. rubiginis ferri gr. iij. extracti rad. gentianæ gr. vi. fyrupi e cort. aurant. q. s. mifceantur: fiat bolus bis die fumendus.

Rec. Pulveris cort. aurantiorum femidrachm. ter de die.

Rec. Pulv. florum chamœmeli femidrachmam, bis in die.

Rec. Sal abfinthii drach. i. elixir aloes fcrup. ii. vini albi unc. iij. mifceantur, fiat hauftus.

Rec. Florum chamœmeli unc. ii. feminum fantonici drach. vi. fyrupi fimpl. q. s. mifce, fiat electarium, capiat molem nucis mofchatæ quoque bihorio.

Rec. Sal. abfinthii femidrach. fpirit. vitrioli tenuis gutt. xxx. aquæ alexiter. fimpl. unc. iv. mifce, fiat hauftus, ingruente paroxyfmo fumendus.

Rec.

But after all, it is certain that the bark, when good in its kind, and judiciously ad-

Rec. Florum chamœmeli, rad. ſerpentariæ virgin. ſingulorum ſemunciam, limaturæ ferri drach. ij. ſyrupi e cort. aurant. q. s. fiat electarium, cujus capiat æger molem nucis moſchatæ quater de die.

Rec. Sal ammoniac. crud. drach. ij. ſal polychreſt. ſpirit. volatil. aromat. ſingulorum drach. i. aquæ menthæ vulgar. ſimpl. unc. viij. ſacchari albi unc. i. miſce, capiat cochleare unum ſingulis horis tempore paroxyſmi.

Rec. Sal ammoniac. crud. theriacæ venetæ ſingulorum ſcrup. ij. miſce, capiat hora una ante adventum paroxyſmi.

Rec. Sal abſinthii drach. ij. vini albi lib. i. miſceantur, capiat partitis vicibus tempore apyrexiæ.

In the Eaſt Indies, the Tellicherry bark, or what is there called the Cort de Pala, has been found very beneficial in removing obſtinate intermitting fevers; and the bark of Mahogoni, which reſembles much the Peruvian bark, and is often fraudulently mixed with it, is ſaid lately to have been found ſerviceable in Jamaica, for the cure of intermitting fevers.

For other remedies, ſee the article Febris intermittens, in the Formula towards the end of the Eſſay on preſerving ſeamen.

miniſtered,

miniſtered, has often completed a cure, when every other remedy had proved unſucceſsful.

A failure of the bark in removing intermitting fevers, frequently proceeds from one or more of theſe three cauſes: From not perſevering for a ſufficient length of time in its uſe; from adminiſtering it in too ſmall doſes; or from its being given in an improper form.

As to the firſt, it is a prevailing opinion, that an ounce, or an ounce and an half of the bark, ſhould entirely prevent the return of another paroxyſm. But this is a miſtake; as another and ſevere fit will often attack a patient who has taken that quantity. In this caſe, inſtead of doubting the efficacy of the medicine, the patient ought to perſevere, with an increaſe of the doſe, until five or ſix ounces at leaſt have been taken.

The bark is often given in too ſmall doſes. In quotidians and double tertians, where the intervals between the fits are ſhort, from one drachm to two drachms of

it ſhould be taken every two or three hours.

The form in which this medicine ought to be adminiſtered is of ſome conſequence. Mucilages and ſyrups have been recommended to conceal the taſte of it; but, from various experiments, I find nothing more effectual than ſmall beer or milk, eſpecially the latter. A drachm of bark mixed with two ounces of milk, and quickly drank, may be eaſily taken by a perſon of the moſt delicate taſte, and by waſhing the mouth afterwards with milk, there will not remain the leaſt flavour of the bark. If the mixture be not drank immediately, the bark will quickly impart to the milk a bitter taſte. The bark is commonly given in electuaries or boluſes: but in theſe forms it proves much leſs efficacious than when given in juleps or draughts, with the plentiful addition of wine or ſpirits. I have obſerved that ſix drachms of powdered bark, given in a julep, conſiſting of one-fourth or one-third of brandy, is as effectual as an ounce of the powder, in the form

of an electuary, and proves leſs ungrateful to the ſtomach.

Many have imagined that the virtues of the bark are aſſiſted by the radix ſerpentariæ and ſal abſinthii; ſome by the elixir vitrioli, or tinctura roſarum; and others by camphire, cinnabar, aromatic ſtomachics, and ſteel. But being thoroughly convinced that the virtues of the bark are greatly improved by wine or ſpirits, I now ſeldom preſcribe with it any of the above-mentioned ingredients, which might render it more nauſeous and diſagreeable.

For patients unaccuſtomed to wine or ſpirits, each draught ſhould be warmed with the ſpir. ſal ammoniaci, or with the * tinctura myrrhæ; both which improve the efficacy of the bark.

When a patient under a courſe of this medicine is ſeized with a nauſea or vomit-

* A drachm of the bark in powder may be given in two ounces of an aqueous vehicle. That quantity would require half a ſcruple by weight of ſpir. ſal ammoniac, or a drachm of the tinct. myrrhæ.

ing,

ing, I preſcribe an emetic, which likewiſe contributes to the cure. But finding the bark entirely nauſeated, from a weakneſs of the ſtomach, or from an averſion of the patient to that medicine, it will then be proper to leave off the uſe of the draughts, and to give the bark in clyſters; in which form I have found it as effectual as when given by the mouth. In this caſe, after the operation of a cathartic clyſter, a ſolution of the extractum cort. Peruv. will be found moſt proper, with the addition of a ſufficient quantity of the tinctura thebaica, in order to its being longer retained*; a ſmall quantity of opium being commonly found effectual to prevent the bark, in any form, from purging.

An obſtinate intermitting fever, which two ounces of the bark in draughts, taken in the interval of a fit, had failed to re-

* Rec. Extracti cort. Peruvian. ſemunciam, ſolvatur, coquendo in aquæ fontan. unc. iiij. et adde olei olivarum ſemunciam, tinctur. thebaicæ, gutt. v. ad x. miſce, fiat enema, quarta quaque hora injiciendum.

move, was effectually cured by two ounces of the extract given in clyſters.

The extract has been adminiſtered in clyſters to the quantity of ſix ounces, to patients who could not have received half an ounce of the bark in any other form; and many have been cured by clyſters, after large quantities of the bark had been unſucceſsfully taken by the mouth; it being in this manner that the largeſt quantity of bark can be adminiſtered.

There are however many caſes of intermitting fevers, in which this remedy cannot with ſafety be given in any form. The attack of the fever is often ſo violent, that it introduces an univerſal diſorder in the conſtitution. The patient ſeems ſeldom or never free from the fever, and is conſtantly haraſſed with an intolerable head-ach, pain of the back, and uneaſy ſenſations of heat, pain and oppreſſion over the whole body. In ſhort, there is often no complete intermiſſion of the fever, in which the bark can be given; although, in ſome caſes, the preſervation of the patient's life, and more frequently

frequently that of his conſtitution, ſeems greatly to depend on the adminiſtration of this medicine.

It has long been a prevailing opinion, that the cold fit is attended with the greateſt danger; and that moſt who die of intermitting fevers, expire during the rigour.

I never ſaw a perſon die in the cold fit, but have known ſeveral carried off in the hot one, by ſtrong convulſions, a delirium, and other ſymptoms. I am clearly of opinion, that it is the hot fit, or fever, which not only often endangers the patient's life, but alſo in the moſt common caſes of intermitting fevers, by its continuance, weakens and impairs his whole habit of body.

For this fever I have been ſo fortunate as to diſcover a remedy, which generally in a few hours brings on a perfect and complete apyrexy. The diſcovery was owing to the following incident—

In the month of December 1766, a lady, after ſome days indiſpoſition, was ſeized with

with a violent fit of an ague, which left her very weak, and univerſally diſordered. In thirty-ſix hours afterwards the fit returned; which had continued twelve hours, when I was called to viſit her. At this time her ſtrength and ſpirits were ſo exhauſted, that ſhe began to deſpair of her recovery. She complained of an univerſal pain over the whole body, but principally in the head and back: the head-ach was indeed ſo intolerable, as to threaten a delirium: a conſtant reaching and vomiting at the ſame time reduced her to a ſtate of inſenſibility, accompanied with a ſtrong tendency to convulſions.

Finding her in this condition, I immediately preſcribed an opiate, which in leſs than five minutes reſtored her to a ſtate of perfect eaſe and tranquillity. In leſs than half an hour ſhe ſat up in her bed, and could take nouriſhment. All that night ſhe ſlept little, though ſhe had no other complaint but weakneſs and fatigue. Next day, by taking the bark, which effectually prevented the return of the fever, ſhe quickly recovered her former ſtrength.

About

About a month afterwards ſhe ſuffered a relapſe: the intermiſſions of the fever were ſhort and indiſtinct. When I was called, ſhe had laboured under it forty-eight hours, and moſt of the former violent ſymptoms had already appeared: but as ſhe was very hot and feveriſh, and had no vomiting, I was unwilling at firſt to give an opiate, until, unable to reſiſt her earneſt ſolicitations, I at length conſented to it. This medicine again brought on a perfect intermiſſion, and gave her an immediate relief from all theſe diſtreſſing ſymptoms. Next day ſhe had recourſe to the bark, and has continued ever ſince in perfect health; uſing the precaution of taking the bark once or twice a day during moiſt weather, or when the wind is eaſterly, and particularly at the full moon.

Such benefit being unexpectedly received from an opiate, I determined to make a further trial of its effects. Having at that time twenty-five patients, labouring under intermitting fevers, I preſcribed an opiate for each of them, to be taken immediately after the hot fit, provided the patient had

then any inquietude, head-ach, or any ſuch ſymptom uſually ſubſequent to the fever. The conſequence was, that nineteen in twenty-two received immediate relief; the other three had no occaſion to take it.

Encouraged by this ſurpriſing ſucceſs, I next day ordered the opiate to be given during the hot fit. In eleven patients, out of twelve, to whom it was thus adminiſtered, it removed the head-ach, abated the fever, and produced a profuſe ſweat; which was ſoon followed by a perfect intermiſſion.

Since that time I have preſcribed an opiate * to upwards of three hundred patients, labouring under this diſeaſe; and I obſerved, that if taken during the intermiſſion, it had not the leaſt effect, either in preventing or mitigating the ſucceeding fit; when given in the cold fit, it once or twice

* The following was the draught preſcribed:

Recipe. Aquæ font. ſeſcunciam, aquæ alexiter. ſpirit ſyrup. e meconio, ſing. drachm. ij. tinct. thebaic. gutt. xv. ad xx. M.

ſeemed

ſeemed to remove it; but when given half an hour after the commencement of the hot fit, it generally gave immediate relief.

The effects of opium given in the hot fit of an intermitting fever, are,—1ſt, It ſhortens and abates the fit; and this with more certainty than an ounce of bark is found to remove the diſeaſe. 2dly, It generally gives a ſenſible relief to the head, takes off the burning heat of the fever, and occaſions a profuſe ſweat. This ſweat is attended with an agreeable ſoftneſs of the ſkin, inſtead of the diſagreeable burning ſenſation which affects patients ſweating in the hot fit, and is always much more copious than in thoſe who are not under the influence of opium. 3dly, It often produces a ſoft and refreſhing ſleep to a patient, tortured in the agonies of the fever, from which he awakes bathed in univerſal ſweat, and in a great meaſure free from all complaints.

I have always obſerved, that the effects of opium are more uniform and conſtant in intermit-

intermitting fevers than in any other diſeaſe, and are then more quick and ſenſible than thoſe of any other medicine. An opiate thus given, ſoon after the commencement of the hot fit, by abating the violence, and leſſening the duration of the fever, preſerves the conſtitution ſo entirely uninjured, that ſince I uſed opium in agues, neither a dropſy nor jaundice has attacked any of my patients in theſe diſeaſes.

In caſes where opium did not immediately abate the ſymptoms of the fever, it never augmented their violence: on the contrary, moſt patients reaped ſome benefit from an opiate given in the hot fit; and many of them bore a larger doſe of opium at that time than at any other: and I can venture to affirm, that even a delirium in the hot fit is not increaſed by opium; though opium will not remove it. Hence, is it not probable, that many of the ſymptoms attending thoſe fevers are ſpaſmodic*, but more eſpecially the head-ach?

Opium

* If the patient be delirious in the fit, the adminiſtration of the opiate ought to be delayed, until he recovers

Opium ſeems alſo, in this diſeaſe, to be the beſt preparative for the bark, as it not only produces a complete intermiſſion; in which caſe alone that remedy can with ſafety be adminiſtered; but occaſions ſo ſalutary and profuſe an evacuation by ſweat, as generally to render a much leſs quantity of the bark requiſite.

I commonly preſcribe the opiate in about two ounces of tinct. ſacra, when a patient is coſtive, who is to take the bark immediately after the fit: thus at the ſame time ſhortening the fit, and cleanſing the inteſtines, previous to the adminiſtration of the bark; the operation of the tinctura ſacra not being prevented, though ſomewhat retarded by the opiate: and the adminiſtration of an opiate, after a vomit given juſt before the fit, ſhould be poſtponed until the hot fit is begun.

It is frequently almoſt impoſſible to make children ſwallow any medicine which has a

covers his ſenſes; when an opiate will be found greatly to relieve the weakneſs and faintneſs which commonly ſucceed the delirium.

diſagree-

disagreeable taste or smell. In this case, for children labouring under intermitting fevers, I order the spine of the back to be anointed, at the approach of the fit, with a liquor, composed of equal parts of tinctura thebaica and liniment. saponac. which has often prevented it. If this should not produce the desired effect, two or three tea-spoonfuls of the syrup. e meconio, given in the hot fit, will generally be found to mitigate the symptoms. But for the entire removal of the disease, after purging with magnesia alba, I prescribe a drachm of the extract. cort. Peruv. with a few drops of the tinct. thebaica, in a clyster, to be repeated every three hours, for a child of about a year old. The magnesia often occasions a vomiting, when the stomach is oppressed with phlegm; which evacuation should be promoted with warm water. The constant heaviness of the head, occasioned by these fevers, in such tender constitutions, proceeds most probably from a pain fixed there, and is best relieved by the application of a blister to the back.

These

Theſe obſervations are the reſult of an extenſive practice; as during the late epidemical rage of intermitting fevers for three years paſt, I ſeldom viſited leſs than thirty or forty patients every day, labouring under every ſpecies of this diſeaſe. I have here confined myſelf chiefly to practical obſervations, as all the different ſpecies of intermitting fevers have already been amply deſcribed, both by the ancient and modern phyſicians; thoſe diſeaſes having been as obſtinate in Greece and Rome, in the days of Hippocrates and Galen, as they are at this preſent time *.

But although nothing more can be added to the accurate deſcription of ſuch fevers, as

* Les fievres intermittentes, qu'on appelle vulgairement fievres d'acces, exercent leur empire dans preſque tous les Golfes du Levant; tellement que j'ai vu dans ceux du Volo, de Zeitoun, de Lepante, de Corinthe, d'Alexandrete, et pluſieurs autres, des vaiſſeaux preſque deſarmés par les ravages qu'elles avoient faites ſur les equipages.

Eſſai ſur les maladies des gens de mer, par G. M. Maitre des Arts et en Chirurgie, publié à Marſeille, an. 1766.

given by thoſe authors, yet the induſtry of later ages, by the diſcovery of new medicines, and by the more extenſive application of thoſe before known, has rendered theſe diſeaſes no longer the opprobrium of phyſic.

Upon the whole, the phyſician who perfectly underſtands the judicious uſe of bliſters, bark and opium, will ſeldom find himſelf diſappointed in re-eſtabliſhing the conſtitutions of patients who have been afflicted with theſe diſeaſes, and in reſtoring them to a ſtate of perfect health.

Propoſals for preventing a want of freſh water and a ſcarcity of proviſions at ſea.

IT may not be foreign to the ſubject of this treatiſe, to offer a few directions, to defend thoſe who go abroad, againſt the calamities of hunger and thirſt.

In the year 1761, I was ſo fortunate as to diſcover, that ſea water, ſimply diſtilled, without the addition of any ingredient, afforded a water as pure and wholeſome as that obtained from the beſt ſprings.

This, like many other uſeful Diſcoveries, is claimed from the author by another perſon, is ſaid to have been formerly known, and meets with various objections. Firſt, A claim to this diſcovery has been publickly

lickly made by Doctor Poiſſonniere; as appears in a paragraph of news from Paris, dated July the 9th, 1764.

But it was in the year 1761, that I publickly demonſtrated, by ſeveral trials, and various experiments, at the royal academy at Portſmouth, that a ſimple diſtillation rendered ſea water perfectly freſh, pure and wholeſome. Theſe experiments were made in the preſence of Mr. Hughes, reſident commiſſioner of the navy at that port, and of Mr. Robertſon late maſter of that academy.

In the month of May 1762, an account of this diſcovery was read to a numerous audience of the royal ſociety in London; when it may be ſuppoſed to have been communicated by ſome of the members of that learned body to their correſpondents in France. And in the month of March 1763, the book * containing this diſcovery

* The ſecond Edition of my Eſſay on preſerving ſeamen, where, in the note, page 85, will be found an account of the diſcovery, and the benefits ariſing from it. This note is the place always referred to in the following pages.

was

was publiſhed at London, by the authority of the lords commiſſioners of the admiralty of Great Britain; which honour their lordſhips were pleaſed to confer, on account of this important diſcovery.

So I ſtill claim the merit of this diſcovery, until Doctor Poiſſonniere ſhall prove his having communicated his knowledge of it to any perſon before the dates here mentioned.

Secondly, It is ſaid, this ſimple method of rendering ſea water freſh was before mentioned by lord Verulam. The paſſage * referred to is as follows: " It hath been " obſerved by the ancients, that ſalt water " boiled, or boiled and cooled again, is " more potable than of itſelf raw: and yet " the taſte of ſalt in diſtillations by fire " riſeth not; for the diſtilled water will be " freſh. The cauſe may be, that the ſalt " part of the water doth partly riſe into a " ſcum on the top, and partly goeth into a " ſediment in the bottom, and ſo is rather a

* Bacon's Natural Hiſtory, Cent. 9th, Exp. 881.

" ſeparation than evaporation, but it is too
" groſs to riſe into a vapour, and ſo is a
" bitter taſte likewiſe; for ſimple diſtilled
" waters of wormwood, and the like, are
" not bitter."

This great philoſopher knew, that neither a bitter taſte nor that of ſea ſalt roſe in diſtillation with water, it being a common cuſtom to preſerve herbs for diſtillation with ſea ſalt, which notwithſtanding being put in the ſtill with the ſalt, yet yield a water perfectly freſh. But it was not the ſalt itſelf, nor the bitter taſte, which was ſuppoſed to riſe in the diſtillation of ſea water, but a bituminous ſubſtance, and a ſpirit of ſea ſalt; which has hitherto been the unanimous and uncontroverted opinion of the chymiſts.

By this paſſage it was not underſtood that the waters of the ſea could be rendered freſh by diſtillation, as appears from the approbation given to the following attempts.

Not

Not many years after his lordſhip's death, ſeveral experiments were made on board ſome ſhips at Spithead, by Sir Theophilus Oglethorpe and ſome other gentlemen, who had obtained a patent for diſtilling from the ſea a water freſh and potable, by means of ſeveral additional ingredients.

In the year 1739, the learned Doctor Hales propoſed a method of diſtilling freſh and wholeſome water from putrified ſea water.

In the year 1753, Mr. Appleby was thought to have brought this matter to the greateſt perfection, by diſcovering an effectual method of fixing this ſuppoſed bitumen and ſpirit of ſalt, which was publiſhed in the London Gazette of January 22d, 1754, as follows:

" Mr. Joſhua Appleby of Durham che-
" miſt, having diſcovered an eaſy and ex-
" peditious method of rendering ſea water
" freſh and wholeſome at ſea; and the
" ſame, on a reference from the admiralty,
" having been thoroughly examined and

 " approved

" approved by the college of phyſicians, " and the commiſſioners of the victualling, " the lords commiſſioners for executing the " office of lord high admiral of Great Bri- " tain and Ireland, have publiſhed the pro- " ceſs uſed by the ſaid Joſhua Appleby in " the London Gazette, that ſo uſeful a diſ- " covery may be univerſally known. It is " as follows:

" Put 20 gallons of ſea water into a ſtill, " together with ſix ounces of lapis infer- " nalis, and ſix ounces of bones calcined to " whiteneſs, and finely powdered. From " this quantity 15 gallons of freſh and " wholeſome water may be extracted, in " two hours and an half, at the expence of " little more than a peck of coals.—This " proportion of ingredients will anſwer " very well in theſe northern ſeas; but in " ſome parts of the Mediterranean or In- " dian ſeas, where the water is more ſalt " and bituminous, the quantity muſt be in- " creaſed to nine ounces of each.——The " ſhip's boiler ſhould not be uſed for this " proceſs, what remains being very nox- " ious."

6

The

The attention of all Europe being at that time drawn towards this diſcovery, which was then eſteemed the moſt fortunate of the age, various ſubſtitutes were propoſed, inſtead of the noxious ingredients uſed in Mr. Appleby's proceſs. For this purpoſe, Doctor Butler recommends capital ſoap leys, Doctor Alſton limeſtone, and Doctor Hales powdered chalk.

The manner in which I fortunately diſcovered that all thoſe ingredients were unneceſſary, and that a ſimple diſtillation rendered ſea water perfectly freſh and wholeſome, may be ſeen in my letter to the Royal Society, inſerted in page 85 of the ſecond edition of the Eſſay on preſerving ſeamen.

The principal objections that have been urged againſt the utility of this diſcovery, I ſhall here endeavour to obviate.

Objection 1. A ſtill is requiſite for the diſtillation; which would be inconvenient in a ſhip.

Anſwer. The principal advantage of this diſcovery conſiſts in their being no longer a neceſſity for carrying a ſtill to ſea, as the ſhip's coppers or pots for boiling the victuals, fitted with proper heads, will fully anſwer that purpoſe; and theſe coppers are generally fixed in as commodious a manner as any ſtills can be. That the diſtillation of ſea water from theſe veſſels will not injure them, appears from their being daily cleanſed by the boiling of ſea water in them; whereas when chalk, lime, and that poiſonous ingredient lapis infernalis were uſed, a ſtill ſeems to have been neceſſary; as it would require great trouble to clean the coppers afterwards, and to render them again fit for boiling the victuals. No better proof can be obtained of the coppers being conſtantly kept clean, and free from verdigreaſe, than the diſtilled water being always perfectly ſweet and good.

Objection 2. A ſufficient quantity of fuel for this operation cannot conveniently be carried to ſea.

Anſwer.

Anſwer. I have already ſhewn, in the Eſſay on preſerving ſeamen, that freſh water may be procured at ſea, without any additional expence, nay even with a conſiderable ſaving of fuel.

That of ſupplying all perſons at ſea with a quantity of water ſufficient for every common uſe, was not at that time the object of my attention; which was then confined to two things:

Firſt, To make a conſiderable ſaving of the water, by boiling the ſhip's proviſions in cloſe diſtilling veſſels, and daily procuring a ſmall quantity of ſweet water, by the application of the common fire to iron pots, fixed inſtead of bricks at the ſides of the ſhip's grates.

And ſecondly, Effectually to prevent, in future, perſons dying at ſea of thirſt, by recommending ſtill-heads for the coppers; as it will afterwards appear, that the veſſel uſed for boiling the victuals of the whole ſhip's company will ſerve to diſtil a quantity

tity of water ſufficient fully to anſwer this purpoſe.

Such perſons as imagine that a diſtreſs for want of water, will alſo be attended with a want of fuel, muſt be ignorant of the contents of a ſhip, which are almoſt wholly combuſtible.

The ſtowage of the hold is with firewood. The carpenter's ſtores, the junk, or pieces of old cable, &c. would, at the end of the longeſt voyage, ſerve as ſufficient fuel for diſtilling the quantity of water proper to preſerve the lives of the whole ſhip's company for at leaſt two months.

Objection 3. Danger attends the diſtillation of water on board a ſhip.

Anſwer. No more danger attends the diſtillation of ſea water, than the boiling of it in a common pot or copper. The only inconvenience proceeds from its being apt to run over, from too intenſe a heat, or from the motion of the ſhip; to which laſt accident

accident it is much leſs liable in diſtillation, than when boiling in an uncovered copper.

Theſe objections being removed, I ſhall endeavour to point out a few ſimple contrivances for diſtilling of ſea water, for the benefit of thoſe who may be in want of freſh water at ſea, and who ſhall imprudently neglect to carry out a ſtill-head.

When ſea water is boiled in a cloſe covered pot or veſſel, it may be obſerved, that the ſteam ariſing from it is converted into freſh water on the inſide of the cover of the pot. From a pot of thirteen inches diameter, by frequently removing the cover, and pouring off the water collected upon it, a quarter of a pint of freſh water may be procured in an hour. The cover of the pot ſhould be at leaſt five or ſix inches above the ſurface of the ſea water, to prevent its boiling up to it.

Let us ſuppoſe a ſhip at ſea to be in diſtreſs for want of water, having eight

men

men on board, and that the pot for boiling their provifions can contain five gallons and an half, being twelve inches in diameter; by the following fimple contrivance, with only a tea-kettle, a mufket, and a cafk, one gallon of frefh water may be procured every three hours, which is a pint for each man.

File off the handle of the tea-kettle, and fix the head of it, when inverted, into a hole made for that purpofe, in the cover of the pot. Take the barrel of the mufket out of the ftock, and after unfkrewing the breeching pin, put it through two holes bored for its reception in the cafk, with a proper defcent. Infert the fpout of the tea-kettle into the upper end of the barrel, and after ftopping up the holes in the cafk, and filling it with fea water, there will be a complete ftill, and a refrigeratory or cooler to condenfe the fteam. All the joinings and places from whence the fteam could efcape, ought to be luted or ftopped up with a pafte compofed of equal parts of chalk and meal, moiftened with a little falt water; and the tea-kettle with the cover of

of the pot ſhould be kept down by weights, to prevent the ſteam from forcing them up.

If the caſk ſhould be thought too near the fire, the tube may be prolonged by the barrel of another muſket, or by a wooden pipe. If the barrel of another muſket be uſed, whoſe bore is not large enough to receive the extremity of the former, one end of it ſhould be heated in the fire, and dilated with a marline-ſpike. If a wooden pipe be uſed, it ſhould not be bored with a hot iron, as I have found by experience that the burnt wood would impart a permanent diſagreeable taſte to the diſtilled water.

If we may ſuppoſe a ſhip at ſea to have no tea-kettle on board, then let the wooden hand-pump, with which the water or beer is pumped out of the caſks, be cut through obliquely, and joined, ſo as to form an acute angle. One end of this tube ſhould be fixed in the hole made in the cover of the pot, the other ſhould be faſtened to the

gun-barrel. From this apparatus, nearly the ſame quantity of water may be procured as from the former by means of the tea-kettle.

It may juſtly be ſuppoſed that the coppers uſed for boiling the proviſions will, in every ſhip, contain the proportion of above two quarts of water for every perſon on board, which will be ſufficient to yield in diſtillation the proportion of three pints of freſh and wholeſome water.

From the improvements made in diſtillation by the ingenious Doctor Hales, publiſhed in the year 1757, it appears, that three pints of water could be procured in five minutes, that is, fifty gallons in twelve hours, from a ſmall cylindrical ſtill of Mr. Durand's, by the addition of ſix pewter plates ſet edgeways in its head. This ſtill was only 15 inches in diameter at the wideſt part, and held ſix or ſeven gallons. A ſtill 22 inches wide, containing 30 gallons, would yield in diſtillation 100 gallons in the ſpace of 12 hours; and a ſtill 32 inches

inches in diameter, would give 200 gallons in the ſame time, attended only with the ſmall expence of a buſhel and an half of coals, or of a proportionable quantity of any other fuel. Hence three chaldron of coals are more than ſufficient to ſupply 400 men, which is the complement of a ſixty gun ſhip, for two months, with half a gallon of water per day for each perſon.

From what has been ſaid it is evident, that no perſon at or near the ſea can ſuffer death from an abſolute want of water, if they will only take the precautions which prudence and ſelf-preſervation would ſeem to dictate.

That this ſubject deſerves the moſt ſerious attention, will ſufficiently appear from the following extract of a letter ſent me from the Havannah, dated 1ſt September 1762: "Before the ſurrender of this place, "our diſtreſs for want of water became "inexpreſſible: I would have given with "pleaſure half a guinea for a pint of ſuch "diſtil-

"diſtilled ſea water as I have frequently "drank at your table. Numbers of our "men died, from a real want of water, "and many more from drinking water "which was unwholeſome and poiſon- "ous."——Would not a few ſtills, ſent from Jamaica, have ſaved the lives of theſe men?

Since the firſt edition of this Eſſay, in the Dolphin ſhip of war, in her ſecond voyage round the world, on a paſſage from Batavia to the Cape of Good Hope, 56 gallons of ſea water being put into a ſtill, 42 gallons of freſh water were drawn off in the ſpace of five hours thirteen minutes, with the expence of nine pounds of wood, and of ſixty-nine pounds weight of coals; which was upwards of a quart of water for each man then on board.

In the year 1769, the experiment above-mentioned, of diſtilling with an inverted tea-kettle and gun-barrel, was alſo tried on board the Dorſetſhire, in her paſſage from Gibraltar to Mahon, having then Lord George

George Lenox's regiment on board. In leſs than two hours the carpenter's pitch pot was cleaned out, fitted with a cover, and the whole apparatus got ready. The only difficulty which occurred, was to inſert the ſpout of the tea-kettle into the gun-barrel; but this was preſently ſurmounted by joining them with ſome of the carpenter's ſheet lead. Twenty-two quarts of ſea water were then put into the pot, from which 19 quarts of freſh water were drawn off in four hours, with the expence of ten pounds of wood.

Diſtilled ſea water is purer than ſpring, river, and even rain water. The calcareous or empyreumatic taſte, which it receives from the diſtilling veſſels, is, in ſome meaſure, leſſened by throwing away the firſt running from the ſtill, and wholly removed by keeping it for ſome time, when it will be found an excellent well-flavoured water, perfectly ſweet and incorruptible, ſo as to keep for many years, if put in clean veſſels.

In the ſteam of boiling ſea water all ſorts of proviſions, ſuch as freſh or ſalted beef and pork, fowls, rice, &c. may be ſtewed or dreſſed, equally well as in freſh water. For this purpoſe, they may be put into a net or a cullender, and, being placed in the mouth of the pot containing the boiling ſea water, be cooked in like manner as the Turks dreſs their favourite diſh, a Pillau; or the meat may be ſuſpended on hooks in the boiling pots, ſo as not to touch the ſea water, the ſteam being at the ſame time confined by a tight cover.

But when a quantity of proviſions are to be dreſſed in this way, the beſt method will be to convey the whole ſteam of the boiling water into another veſſel, by means of a pipe. In this laſt veſſel, the ſalted meat to be ſuſpended on hooks, in ſuch manner, that the brine may fall into the bottom of the veſſel, and the ſteam be equally received by the whole.

Having thus uſed our endeavours to provide all perſons at, or near the ſea with good water,

water, our attention ſhall next be directed towards ſecuring them againſt the dreadful calamity of famine: for which purpoſe I offer the following obſervations.

The powder of ſalep, and portable ſoop diſſolved in boiling water, form a rich thick jelly, capable of ſupporting life for a conſiderable length of time; as appears from the daily inſtances of perſons having been ſupported for many months by a much leſs nouriſhing diet, boiled rice, and even by gum Arabic * alone.

An ounce of each of theſe articles diſſolved in two quarts of boiling water, will

* Haſſelquiſt, in his voyages to the Levant, informs us, that a caravan from Ethiopia to Egypt having expended all their proviſions, lived for two months on gum arabic diſſolved in water; this gum having luckily been part of their merchandiſe. The gum ſenega or arabic not only ſerves as a ſuſtenance for whole negroe towns, during a ſcarcity of other proviſions, occaſioned ſometimes by a failure of their crops of millet and rice; but the Arabs, who twice a year collect this gum in the inland foreſts on the north-ſide of the River Niger, have no other proviſions to live upon for ſome months.

convert it into a thick jelly, which will be ſuſtenance ſufficient for one man a day, and as being a mixture of both animal and vegetable food, muſt prove more wholeſome and nouriſhing than double the quantity, or a gallon of rice-cake made by boiling rice in water:

This laſt, however, ſailors are often obliged ſolely to ſubſiſt upon for ſeveral months, eſpecially in voyages to Guinea, when the bread and flour are exhauſted, and the beef and pork, having been ſalted in hot countries, become ſpoilt, and unfit for uſe.

But as a nouriſhment, the inferiority of rice to ſalep is not only from its conveying leſs nouriſhment in double the bulk, but alſo from the great conſumption of fuel, and more eſpecially of water, in the long boiling neceſſary to render it fit for uſe; whereas ſalep will form a paſte with cold water, and is not too ſalt when mixed even with ſea water. Salep, when mixed with cold water, requires only ten times its weight

weight of water to form it into a paſte or cake, and if mixed with more, a ſeparation of the redundant water will enſue. This paſte, with the addition of a little vinegar, will ſerve to allay both hunger and thirſt, and will keep good for ſeveral days. When the ſalep is mixed with cold ſea water, it ſhould not be allowed above ſix times its weight of water; and this quantity is juſt ſufficient to render it palatable, it being of itſelf a very inſipid powder. The addition of ſpices to the portable ſoop and ſalep, will not only render them more grateful to the palate, but alſo greatly improve their nutrimental qualities; as would appear from the following late incident of famine at ſea.

In the year 1762, while the Engliſh troops were at Manila, a Malaye ſhip arrived there from Macaſſar, which, by the ſhifting of the Monſon, had been detained at ſea much longer than was expected; the men had been reduced to ſuch extremities for want of proviſions, as to be obliged to ſubſiſt almoſt wholly for two months upon

water and ſpices; the latter, viz. cinnamon, mace, and pepper, being the cargo of the ſhip; notwithſtanding which, upon their arrival at Manila, they all, to the number of 30, appeared to be in perfect health.

From what has been ſaid, we may juſtly deduce the following propoſals:

As the calamity of famine at ſea may ſometimes proceed from the avarice of the maſters of merchant ſhips, who, from a lucrative view, have taken on board too ſmall a quantity of proviſions; if the maſters were obliged, by the articles of agreement with their men, to pay a ſtipulated allowance of money for any deficiency that might happen in their proviſions during the voyage, as is done in the royal navy, would it not tend greatly to prevent the frequency of this diſtreſs?

As two pounds of ſalep, with an equal quantity of portable ſoop, will afford a wholeſome diet to one perſon for a month, would

would it not be expedient for every ſhip to carry to ſea a quantity of theſe articles, in proportion to the number of the men, leſt from unavoidable accidents the other proviſions might be exhauſted during the voyage?

As ſalep and portable ſoop contain the greateſt quantity of vegetable and animal nouriſhment that can be reduced into ſo ſmall a bulk, would not theſe articles be extremely beneficial, when through fire, ſhipwreck, or other accidents, the crew are obliged to have recourſe to their boats *?

As

* Suppoſing a boat furniſhed with eleven gallons of water, two pounds of ſalep, and two pounds of portable beef-ſoop for each man, it is probable none in it will die of hunger or thirſt for at leaſt a month; during which time, the daily allowance of each perſon will be more than a quart of water, eleven ounces of a ſtrong ſalep-paſte, and an ounce of portable ſoop. The ſoop ſhould be allowed to melt in the mouth; and in that ſmall quantity, if properly made, are contained the nouriſhing juices of above three-quarters of a pound of

As theſe two articles, when kept dry, will remain good for ſeveral years, would they not alſo prove ſerviceable in beſieged towns, and in the long marches of armies; as every ſoldier could then carry a fortnight's ſubſiſtence for himſelf, without any inconvenience, to be uſed in caſe a ſupply of other proviſions ſhould be ſtopped.

I do not here offer to the public an alimentary paſte or powder, to ſuperſede the

of beef. In caſes of great extremity, the ſalep may be mixed with the ſea-water, and will ſtill be equally wholeſome. All this will be attended with only a trifling expence, as the ſalep is commonly ſold at four ſhillings and ſixpence per pound, and the portable ſoop at half a crown.

One neceſſary precaution, which ought never to be omitted in a ſhip at ſea, is always to have a caſk of water either in the boat, or in ſome convenient place upon the deck, from whence it may be eaſily conveyed into the boat, as in caſes of fire, and of many other diſaſters at ſea, it is often impoſſible to go down into the hold for water. The ſame precaution is equally neceſſary with reſpect to the ſalep and portable ſoop.

neceſſity

necessity of supplying our fleets and armies with other food; nor will the discovery of freshening sea water render the common precautions of guarding against the want of that necessary support of life less needful and expedient: the intention of all these proposals being solely to prevent mankind, in many particular situations of distress, from suffering a cruel and untimely death, under the excruciating tortures of hunger and thirst.

ERRATA.

Page 64. Line 14. of the note, *for* ſeven ounces, *read* ten ounces.

—— 208. —— 23. *For* word, *read* world.

—— 322. —— — In the note, *for* ſpirit. vin. rect. ʒſs. *read* ℥ſs.

INDEX

TO THE

NAMES of PLACES.

A.

ALexandretta, Gulph of, 349
Algiers, 38, 140
America, 33
Antigua Iſland, 118, 213, 244
Arabia, 111

B.

Bagdat on the frontiers of Perſia, 109
Baia, near Naples, 157
Banana Iſlands, 247
Banda Iſland, 84
Baraſat in Bengal, 220
Barbadoes Iſland, 118, 223
Baſſora near the frontiers of Perſia, 83, 110
Baſtimento Iſlands, 132
Batavia in Java, 96, 148, 191, 220, 250
Bencoolen in Sumatra, 86, 88, 220
Bengal, 87, 88, 148, 220, 222
Benguela in Congo, 54, 247
Benin in Guinea, 47, 54
Bermuda Iſlands, 118
Bombay Iſland, 91, 94, 221
Bonaviſta, one of the Cape de Verd Iſlands, 139
Bourbon Fort, 81
Braſil, 216
Bridgetown in Barbadoes, 118, 213

C.

Cadiz in Spain, 124, 168
Calabar in Guinea, 47
Calcutta in Bengal, 102, 104, 220, 255
Campania of Rome, 29
Canary Iſlands, 79
Canada Iſlands, 34
Cape Coaſt Caſtle in Guinea, 51, 54, 171
—— de Verd Iſlands, 5, 80
—— of Good Hope, 81
—— Lopez, 54
Carolina, 35
Carpenter's River in Mexico, 122
Carthagena in South America, 9, 134
Catcheu in Guinea, 69, 247
Cayenne Iſland near the country of the Amazons, 9, 119
Cerebon near Batavia, 221
China, 84
Corinth, Gulph of, 349
Coromandel Coaſt, 93, 94, 100, 141, 142, 143, 288
Corſica Iſland, 32
Cuba Iſland, 135
Cudalore in the Eaſt-Indies, 94
Culpee in the River Hughly, 254
Curaçoa Iſland, 9, 119, 126, 131

D.

Dauphin Fort in Madagaſcar, 81
Diego Reys Iſland, 81
Dixcove in Guinea, 54
Dominica Iſland, 146, 215

E.

Egypt, 39, 144
Engliſh Harbour in Antigua, 213, 233
Euphrates River, 115

F.

Ferdinando Po Iſland, 80
Florida Eaſt, 35
—— Weſt, 35, 216, 234

G.

Gambia River in Guinea, 45, 53, 58, 68, 151, 170, 171, 174, 193, 194
Gambroon in Perſia, 83, 108
Garatte in Bengal, 220
Georgia in America, 35
Gibraltar, 33
Gigarſhore in Guinea, 67
Goa in the Eaſt Indies, 96
Gold Coaſt in Guinea, 54
Goree Iſland, 54, 163
Granada Iſland, 118, 190, 222
Granadine Iſlands, 118, 190, 222
Guadalupe Iſland, 119, 215
Guinea, 3, 41, 171, 246

H.

Halifax in North America, 34
Havannah in the Iſland of Cuba, 135
Honduras, Bay of, 122
Hungary, 29

I.

Jamaica Iſland, 9, 118, 156, 187, 223
Java Iſland, 84
India Eaſt, 84, 286
—— Weſt, 117, 209, 258
Indrapour in Sumatra, 85

K.

Karec in the Perſian Gulph, 109
Kingſton in Jamaica, 224, 227
Kingſton in St. Vincents, 118

L.

La Vera Cruz in Mexico, 120
Lepanto, Gulph of, 349

M.

Madagaſcar Iſland, 81, 254
Madraſs in the Eaſt Indies, 94, 140, 141, 143, 221
Malabar, Coaſt of, 92, 142, 287
Marlborough Fort in Sumatra, 87, 220
Manila in the Eaſt Indies, 95
Martinico Iſland, 9, 119
Maryland, 35
Maſcarenhas Iſland, 81
Mauritius Iſland, 81
Melinda in Zanquebar, 82
Mexico, Bay of, 120
——— City of, 119
Middleburgh in Zealand, 26
Minorca, 33
Mobile in Florida, 36, 216
Mocha in Arabia, 83
Mohilla, one of the Comoro Iſlands, 254
Monk's-hill in Antigua, 214, 231
Montſerrat Iſland, 118
Morocco, 38
Moſquitto Shore in America, 122
Moſul in Aſiatic Turkey, 112
Mozambique in Africa, 82

N.

Naples, 197
Navy Iſland near Jamaica, 228
Negapatnam in the Eaſt Indies, 94
Negrais' Iſland, 84
Nevis Iſland, 118
New England, 35

New-

Newfoundland, 34
Niziben in Afiatic Turkey, 113

O.

Orleans in Louifiana, 47

P.

Padang in Sumatra, 85
Penfacola in Florida, 35, 139, 169, 216
Pondicherry in the Eaft Indies, 95
Port-Maho in the Bay of Mexico, 121
Port-Royal in Jamaica, 224, 227
Porto-Bello in Terra Firma Proper, 9
Princefs Ifland, 80
Prince Rupert's Bay in Dominica, 215

Q.

Quebec in Canada, 34
Quilo in Zanquebar, 82

R.

Rio Morte in Mexico, 122
Rio Nunes in Guinea, 67

S.

St. Antonio, one of the Cape de Verd Iflands, 80, 164
St. Auguftine's Bay in Madagafcar, 81
St. Chriftopher's Ifland, 118, 213
St. David's Fort in the Eaft Indies, 94
St. Domingo in the Ifland of St. Jago, 215
St. Domingo in Hifpaniola, 9, 119, 129
St. Euftatia Ifland, 9, 119
St. Helena Ifland, 80
St. Jago Ifland, 5, 68, 164, 215, 254
St. Johanna, one of the Comora Iflands, 254
St. Nicholas, one of the Cape de Verd Iflands, 80
St. Paul de Loanda in Congo, 54
St. Salvadore in Congo, 54
St. Thomas Ifland near the Coaft of Africa, 80, 235

St. Thomas' Mount near Madraſs, 221
St. Vincent's Iſland, 118
Samaring near Batavia, 221
Sardinia Iſland, 30
Scambia River in Florida, 234
Scanderoon. See Alexandretta
Senegal, 43, 44, 45, 48, 49, 53, 56, 171, 173, 203, 249
Sierra Leona in Guinea, 44, 54, 146, 165, 174
Sillabar in Sumatra, 220
Spaniſh Town in Jamaica, 224
Succondee in Guinea, 54
Sumatra Iſland, 84, 220
Surat in the Eaſt Indies, 94
Surinam in South America, 9, 119

T.

Tanjapour near Batavia, 221
Tellicherry in the Eaſt Indies, 94
Tigris River, 115
Tobago Iſland, 118
Tranquebar in the Eaſt Indies, 95
Tripoli in Barbary, 38, 140
Tunis, 38, 140

V.

Virginia, 35
Volano, Gulph of, in European Turkey, 349

W.

Wampoa in China, 84
Whydaw in Guinea, 54, 139, 166
Wight Iſland, 213

Z.

Zealand, 36
Zeitoun, 349

INDEX

OF

DISEASES.

A.

AGUES. See Fever intermitting.
Ague-cake, 68, 72
Apoplexy, (a ſpecies of) 251

B.

Barbiers, 286
Bilious diſorders, 14, 40, 88, 124, 131, 132, 289
Black vomit, 123—27, 132, 135

C.

Cauſus. See Fever ardent.
Cholera Morbus, 131, 186, 274
Cholics, (bilious) 290
Conſumption. See Pthiſis.

D.

Delirium. See Phrenzy.
Diarrhœa. See Flux.
Dropſy, 27, 294
Dry Belly-ache, 55, 280
Dyſentery. See Flux.

E.

Emproſthotonos, 283

F.

Fever, 11, 257
—— ardent, 12, 130
—— inflammatory, 13, 58, 103
—— intermitting and remitting, 10, 14, 15, 18, 21, 31, 35, 57, 58, 84, 88, 98, 102, 108, 146, 299
—— malignant, 13, 56, 88, 131, 198

Fever,

Fever, nervous, 13, 69, 151
—— putrid, 11, 12, 102, 108, 121
—— yellow. See Yellow Fever.
Flux, 10, 68, 88, 100, 126, 131, 274
Flux habitual, 295

G.

Gall Sickneſs, 27, 28
Guinea Worm, 55

H.

Hepatitis. See Diſeaſes of the liver.

I.

Intemperies in Sardinia, 31, 32, 33

L.

Liver, Diſeaſe of, 100—107
—— Inflammation of, 100, 101, 103
—— Suppuration of, 104—107
Locked Jaw, 283

M.

Mordechin. See Cholera Morbus.

O.

Obſtructions of the Viſcera, 290, 29[illegible]
Opiſthotonos, 283

P.

Palſy, a ſpecies of. See Barbiers.
Phrenſy Fever, 186, 228, 271, 300
Pthiſis, 291

S.

Scurvy, 34, 36, 97, 102, 206
Spotted Fever, 133—135
Swelling of the ſpleen. See Ague-cakes.

T.

Tetanos, 283

Y.

Yellow Fever, 15, 122—135, 139, 188, 363--271

FINIS.

NEW BOOKS,

PRINTED according to ACT of PARLIAMENT,

Continue to be sold as usual by JOHN DONALDSON, now the sole Proprietor of the Shop No. 195, the Corner of ARUNDEL STREET in the STRAND, LONDON, known by the Name of the *only* SHOP for CHEAP BOOKS, where the business has from the 1st of October, 1765, been carried on by him for himself and his late Partner Alexander Donaldson of Edinburgh.

AS many People are not acquainted with the Prices Books are commonly sold for, by reading what follows, they will see it their Interest to buy at this Shop.

DONALDSON'S PRICES.				LONDON PRICES.		
L.	s.	d.		L.	s.	d.
0	14	0	Mr. Pope's Works, with all his Notes, 6 vols.	0	18	0
0	12	0	——— Translation of Homer's Iliad and Odyssey, 4 vols.	1	7	0
0	12	0	Lord Bolingbroke's Miscellaneous Works, 4 vols.	1	10	0
1	7	0	Stackhouse's History of the Bible, 6 vols. - - -	3	3	0
1	1	0	Whitby on the New Testament, 2 vols. -	2	10	0
1	16	0	Dr. Doddridge's Family Expository, 6 vols. -	4	4	0
0	3	0	Hervey's Meditations and Contemplations. - -	0	6	0
1	0	0	Shakespear's Works, 8 vols. -	1	8	0
1	5	0	Rollin's ancient History, 10 vols. -	2	2	0
0	15	0	Vertot's Knights of Malta, 5 vols. - -	2	2	0
0	6	0	——— Revolutions of Rome, 2 vols. -	0	10	0
0	6	0	The Adventures of Gil Blas, 2 vols. -	0	12	0
0	3	0	The Devil on Sticks, with cuts, - -	0	6	0
0	10	0	Dr. Winslow's Anatomy, 2 vols. - -	0	15	0
0	7	6	Dr. Macquer's Chemistry, 3 vols. -	0	10	0
0	15	0	Duke of Sully's Memoirs, 5 vols. -	0	18	0
0	6	0	Baron Montesquieu's Spirit of Laws, 2 vols. -	0	12	0
0	7	6	Rousseau's Emilius, 3 vols. - -	0	12	0
0	7	6	Marmontel's Moral Tales, 3 vols. -	0	9	0
0	5	0	Dr. Tissot on Health, 2 vols. - -	0	7	0
0	2	6	——On Diseases of People of Fashion, and on Lit. & Sed. Persons	0	6	6
0	2	0	Moore's Fables for the Female Sex, -	0	5	0
0	9	0	The World, with the Mottos translated, 3 vols. -	0	12	0
0	2	6	Milton's Paradise Lost, - -	0	3	6
0	1	0	Oeconomy of Human Life, - -	0	2	6
0	5	0	Fielding's Amelia, 2 vols. - -	0	12	0
L. 14	0	6	L.	27	2	6

By the above comparison of the prices, it is evident that you can buy of JOHN DONALDSON for Fourteen Pounds and Six pence, the same articles which the London Booksellers charge at Twenty-seven Pounds Two Shillings and Six-pence; so that, in this small Parcel, THIRTEEN POUNDS and TWO SHILLINGS are saved, which it is hoped will induce all book-buyers to look at those CHEAP EDITIONS, before they lay out their money elsewhere.

Besides the above List, J. DONALDSON has a large Assortment of all other New Books, which he sells at the most reasonable prices, amongst which are the following:

1 Dr. Swift's

1. Dr. Swift's Works, a new edition, with the life of the author, notes, indexes, &c. 13 vols. Price 1l. 19s.

2. The Spectator, with frontispieces, 8 vols, Price 16s.

3. The Guardian, 2 vols. Price 4s.

4. Rollin's Method of studying and teaching the Belles Letters, 4 vols. Price 12s.

5. Bossuet Bishop of Meaux's History of France, from the time of Pharamond, to the reign of Charles IX. (where Sully's Memoirs begin), 4 vols. Price 12s.

6. Dr. Young's Works, 4 vols. Price 8s.

7. Dr. Young's Night Thoughts, separate. Price 2s. 6d.

8. Addison's Miscellaneous Works, 4 vols. Price 10s. 6d.

9. Mrs. Rowe's Works, 4 vols. Price 10s.

10. Mrs. Rowe's Letters, separate. Price 2s. 6d.

11. Milton's Poetical Works, containing Paradise Lost, Paradise Regain'd, and all his other Poems, 2 vols, Price 5s.

12. The History of the renowned Don Quixotte de la Mancha, translated from the Spanish of Cervantes, 4 vols. Price 8s.

13. The Adventures of Robinson Crusoe, with cuts. Price 2s. 6d.

14. A Select Collection of Poems, from the most celebrated modern English Authors, 2 vols. Price 5s.

15. A Collection of Original Poems, by Scotch Gentlemen, 2 vols. Price 5s.

16. Gay's Fables, two parts. Price 2s.

17. Allan Ramsay's Evergreen; a Collection of old Scotch Poems, with a glossary, explaining the hard words, 2 vols. Price 5s.

18. Pope's Translation of Homer's Illiad. Price 4s.

19. Pope's Translation of Homer's Odyssey. Price 3s. 6d.

20. Voltaire's Age of Lewis the 15th. 2 vols. Price 5s.

21. ——— Peter the Great. Price 2s. 6d.

22. Dr. Douglas on the muscles, with notes by a celebrated anatomist. Price 5s.

23. Keill's Anatomy of the Human Body, a new edition. Price 2s. 6d.

24. Hervey's Works, 6 vols. Price 18s.

25. The Works of the Author of the Whole Duty of Man, 4 vols. Price 8s.

26. Mathew Henry's Commentary on the Bible, a new edition, 6 volumes folio, Price 4l. 10s.

27. Hall's Contemplations 3 vols. Price 15s.

28. Gordon's Book-keeping, being the plainest book on the subject, 2d edition, 8vo. Price 5s.

29. Hill's Arithmetic in Theory and Practice. Price 3s.

30. Mr. Calender's Collection of Voyages to the South Seas and round the World, from the year 1501, to the year 1766, 3 vols. Price 18s.

31. An Account of the Spanish Settlement in America. Price 5s.

32. Rousseau's Works, 10 vols. Price 1l. 10s.

33. Mason's Collection of English for Schools. Price 2s. 6d.

34. The Works of Henry Fielding, Esq. 12 vols. Price 1l. 10s.

35. Dr Mead's Works, Price 6s.

36. Fable of the Bees, 2 vols. Price 6s.

At the said Shop are sold English and Scotch Laws Books, Bibles, Prayer Books, &c.

N. B. The report propagated of J. Donaldson being removed, or going to remove, is entirely without foundation, as he never intended to quit his present Situation, or have any Concern in any other Shop.

JOHN DONALDSON, in the most respectful manner, desires to return his best thanks to the Nobility, Gentry, Merchants, Tradesmen and others, for their past favours; and now takes the liberty of soliciting the continuance of that honour, which he will ever acknowledge with gratitude. They may depend that nobody can or will supply them with all sorts of printed Books on better terms than he formerly has done, and will always continue to do at his Shop, the corner of Arundel-Street, No. 195, in the Strand.